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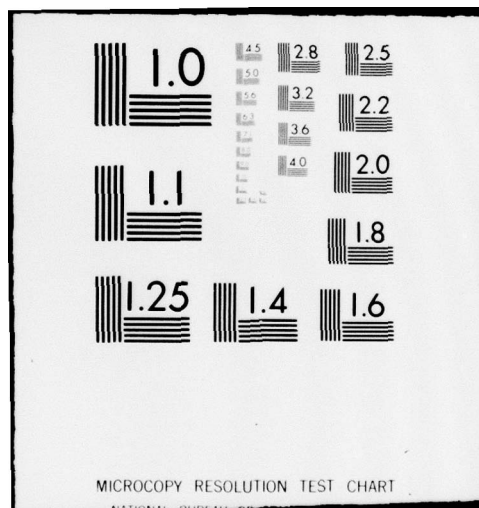
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ABSTRACT

In the past fifteen years Soviet ground forces have dramatically increased their conventional military power to the point where they have become the most heavily armed force in the world. The United States Army has responded to these increases in many respects, but significant gaps still remain. As in so many categories of conventional military power, the Soviet Army possesses a dramatic numerical superiority in artillery. This thesis examines the problems the United States Army artillery faces in defeating Soviet Army artillery in a non-nuclear environment. Examined in depth are both countries artillery weapons, organizations, and tactics, from both an overall perspective and in a European scenario.

The general conclusion of this study is that there are numerous solvable problems in the United States Army artillery system. These problems are identified and general recommendations are made in the areas of artillery weapons development, organization, and tactics.

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A Master of Military Art and Science thesis presented to the faculty of the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas 66027

DEFEATING
SOVIET ARTILLERY

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE

by

EDDY SMITH, MAJ, USA
B.A., Cameron University, 1973

Fort Leavenworth, Kansas

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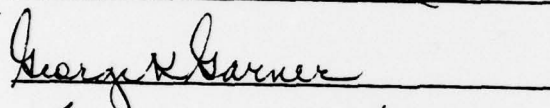
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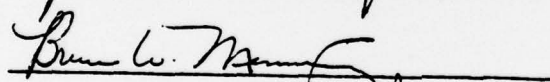
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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the US Army Command and General Staff College or any other governmental agency.
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In the past fifteen years Soviet ground forces have dramatically increased their conventional military power to the point where they have become the most heavily armed force in the world. The United States Army has responded to these increases in many respects, but significant gaps still remain. As in so many categories of conventional military power, the Soviet Army possesses a dramatic numerical superiority in artillery. This thesis examines the problems the United States Army artillery faces in defeating Soviet Army artillery in a non-nuclear environment. Examined in depth are each countries' artillery weapons, organizations, and tactics, from both an overall perspective and in a European scenario.

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CHAPTER I

INTRODUCTION

1. Statement of the Problem

This thesis examines the problem the United States Army conventional artillery faces in defeating Soviet Army artillery. Soviet Army doctrine stresses the advantages offered by the use of massive artillery fire power. As confirmed by the Soviet experience in World War II, artillery fire power is viewed by Soviet tacticians as another form of offensive maneuver.¹ Massive use of artillery will no doubt present significant problems to any greatly outnumbered defending force.

2. Discussion of the Problem

The problem of defeating Soviet artillery will be addressed under three separate but related headings. These include the total numbers of weapons available, the capabilities of these weapons, and the tactics (or the use of these numbers and capabilities). These three topics will be discussed in detail in relevant parts of the thesis, but a brief overview is appropriate here to serve as general background for problem development.

The first topic, that of numbers of weapons available to both countries, was the principal motivating factor behind the development of this thesis. As in so many categories, the United States Army is critically outnumbered in the number of artillery pieces available.

The Soviets possess about 28,000 heavy mortars and conventional

artillery weapons as opposed to 6200 similar weapons within the United States Army.² Production rate figures for the two countries, using 1972 to 1976 data,³ show the Soviets leading by an annual ratio of about 8:1. This is an indication that Soviet superiority in numbers will remain the case for years to come. It should be pointed out that in the past numbers alone have not been the decisive factor in war. History is replete with examples of armies which fought and won against long odds. Other factors, besides numbers, including logistics, strategic mobility, training level of troops, morale, and so on, will be important in a war in Europe. These are all subjects for studies in themselves. Under the right circumstances, the number of weapons available may be a factor of decisive importance in itself.

In addition, it became increasingly apparent as the thesis developed that capabilities of the available artillery weapons were of equal or greater significance than total numbers. In the two critical categories of range and rate of fire Soviet weapons are superior to those of the United States. For example, a comparison of the Soviet M1973 152-mm gun howitzer with the United States M109A1 155-mm howitzer is revealing. The Soviet weapon has a range of 18.5 kilometers and a sustained rate of fire of 5 to 6 rounds per minute.⁴ The M109A1 will achieve 18 kilometers with an oversized propellant charge, but will only provide a sustained rate of fire of 1 round per minute.⁵ A significant point is that recent weapons systems development by the United States Army has not attempted to overcome these disparities, and from all appearances, the research and development community does not intend to do so in the near future.⁶

The third topic, tactics, is equally important. A signifi-

cant difference exists between the artillery weapons systems of the two countries within the realm of tactics. From all appearances, Soviet weapons systems were developed to support tactical considerations, while the reverse seems true of United States artillery weapons systems. Maneuver tactical doctrine for the US Army has changed in recent years, reflecting a focus on the European environment and the necessity to fight outnumbered. Yet, an examination of US Army artillery doctrine reveals serious shortcomings in coping with the Soviet artillery threat. It appears that United States artillery tactics were developed to fit weapons systems rather than the reverse. This conclusion is based on a review of Field Manual 6-20, the "single source reference for fire support training throughout the Army".⁷ While this manual has many redeeming virtues, it fails in at least one respect because it does not (cannot?) give fire supporters adequate tactical instructions on how to defeat Soviet artillery. For example, in the section dealing with strengths and vulnerabilities of the Soviet Army, one of the listed strengths asserts: "massive field artillery can be brought to bear." The countermeasures given to defeat this possibility are:

Aggressively use target acquisition assets to locate enemy batteries. Develop a well planned, responsive counterbattery program. Task electronic warfare systems to locate opponent artillery transmitters for destruction or jamming.⁸

The reality of the situation is that the United States Army artillery unit which could be called upon to fire the "responsive counterbattery program" may be outnumbered by as much as six to one, may be facing an opponent with weapons of superior range and rate of

fire, and may fall victim to his opponents' target acquisition assets. Doctrinal literature for the United States Army field artillery is incomplete in dealing with the problem of defeating Soviet artillery.

Conspicuous gaps include a failure to refer either to the technological superiority of either side or to the use of tactical nuclear weapons. Indications are that the big technological lead once enjoyed by the United States is rapidly diminishing and will be less of a factor in the future.⁹ It is questionable whether technology in itself will be sufficient to defeat the massive Soviet artillery threat. As far as tactical nuclear weapons are concerned, the United States still possesses a marked advantage. However, this advantage will probably only act as a deterrent to Soviet use of tactical nuclear weapons, and not to the use of conventional forces.¹⁰ First use of tactical nuclear weapons by the United States would pose the threat of escalation and a possible strategic nuclear exchange no one is willing to risk.¹¹

In summary, the technological gap between the two countries (whether real or perceived) and tactical nuclear weapons are not considered relevant to this thesis. This thesis attempts to determine, given a conventional war of relatively short duration, with the factors of logistics, training, morale and so forth being fairly equal, whether the United States Army artillery has the appropriate weapons and tactics to defeat the Soviet artillery.

3. Thesis Objectives

This thesis has two specific objectives. The first is to examine Soviet Army artillery weapons systems, tactics and organiza-

tions, with specific regard to capabilities, limitations, and weaknesses, to determine the adequacy of current United States Army field artillery weapons, tactics, and organizations. The second is to determine what changes, if any, in artillery tactics and weapons systems of the United States Army are required to defeat the Soviet artillery threat. This thesis will limit itself to conclusions based on historical events, military experience, and, in general, information available to the educated observer. The latter category includes reports, intelligence summaries, and other sources available to the reading public.

4. Methodology and Scope

A variety of literature on both Soviet and United States artillery was reviewed. Historical events were examined to determine trends and tendencies of the Soviet Army as regards artillery tactics. Current US Army artillery doctrinal literature was likewise reviewed.

The discussion focuses on current Soviet and United States artillery weapons systems and tactics to determine strengths and weaknesses of each. Emphasis is placed on Soviet Army tactics in the offense and US Army tactics in the defense. Soviet Army reliance on tactics developed during World War II is discussed. Warsaw Pact maneuvers, from the artillery viewpoint, would indicate that these tactics are still valid and viable from the Soviet perspective.¹²

Military organizations, other than artillery, or directly affecting artillery employment, are discussed for background information. Maneuver tactics, other than as they directly affect artillery employment are not discussed in detail.

Chapter II contains background information on the historical relationship of the United States and the Soviet Union since World War II, overviews of both the United States Army and the Soviet Army and a brief discussion of the North Atlantic Treaty Organization and Warsaw Pact military balance. The purpose of this information is to afford perspective on the setting for the focal point of this thesis, the artillery of both armies.

Chapter III is devoted to current Soviet artillery weapons, organizations and tactics. Chapter IV is a similar discussion of current United States artillery weapons, organizations, and tactics.

Chapter V consists of a comparative analysis of information contained in Chapters III and IV. Particular attention will be given to the effectiveness of the United States division artillery assets against the Soviet combined arms army artillery assets.

Chapter VI provides conclusions and recommendations in light of information presented in previous chapters.

5. Survey of Literature

In conducting the research for this thesis it was determined that in order to fully understand and compare a subsystem of conventional forces (artillery in this case) several seemingly unrelated areas would have to be examined. These areas included relations between the two countries, the total military force structure, and finally, the subsystem itself. A search in quest of literature in these areas revealed that there is an abundance of material on all subjects.

Four particular sources were very good as general referen-

ces on the peoples' perception of the military forces of the two countries. On the Soviets, one was The Russians¹³ by Hedrick Smith, an outstanding work on the Russian people. Another useful book on the Soviets, albeit from a historical perspective, was A History of the Soviet Army¹⁴ by Michel Garder. On the American side, there were two useful books, The Civilian and the Military: A History of the American Antimilitarist Tradition¹⁵ by Arthur A. Ekirch, Jr, and America Armed¹⁶, a collection of essays edited by Robert A. Goldwin.

For relations between the two countries, sources are plentiful and varied. Of particular value to this thesis were American Defense Policy¹⁷ by the Associates in Political Science, United States Air Force Academy and American Foreign Policy¹⁸ by Henry A. Kissinger.

Sources on the armies of the two countries are numerous and varied. Many current writings compare the two forces as has been done in this thesis. Of historical value on the Soviet forces is B.H. Liddell Hart's The Red Army¹⁹ as well as Garder's book. For US Army history, an important source was the Command and General Staff College Course 6 booklet, Applied Military History.²⁰ On questions of size and structure of the two armies one source stands out above all others. This source was American and Soviet Military Trends Since the Cuban Missile Crisis by John M. Collins. This is an extremely well researched book containing a wealth of information. Other sources included Sizing Up the Soviet Army by Jeffrey Record, Soviet Army Operations²¹, a defense funded study by BDM Corporation, and the Army Historical Series, Stalingrad to Berlin: The German Defeat in the East²² by Earl F. Ziemke. This latter work proved beneficial because lessons from WW II have tended to dictate Soviet Army tactics for the past

thirty-three years.

Sources on the equipment of the Soviet Army included The Warsaw Pact Armies²³ by Friedrich Wiener and William J. Lewis, and Organization and Equipment of the Soviet Army, CACDA Handbook 550-2, by Combined Arms Combat Development Activity, Ft. Leavenworth. This latter booklet provides detailed, yet simplified charts of Soviet Army organization and equipment. Organizational data and equipment references for the US Army are more than adequately covered in Command and General Staff College Reference Book, Reference Data for Heavy Maneuver Forces RB 100-8²⁴ as well as other general works.

ENDNOTES

CHAPTER I

¹A.A. Sidorenko, The Offensive (A Soviet View), (1970), 15-16, 21-25.

²John. M. Collins, American and Soviet Military Trends Since the Cuban Missile Crisis (1978), 186-187. (Hereafter cited as Collins, Military Trends).

³Jay Finegan, "Soviet Buildup: 'Relentless, Ominous'", Army Times (February 26, 1979), 8.

⁴US Army Combined Arms Combat Development Activity, Handbook 550-2, Organization and Equipment of the Soviet Army (1978), 4-2. (Hereafter cited as CACDA HB 550-2).

⁵US Army, Field Manual 6-20, Fire Support in Combined Arms Operations (1977), B-A-2. (Hereafter cited as FM 6-20, Fire Support).

⁶The only recent weapons developed are the M204 (105-mm) and M198 (155-mm). The M204 was shelved without full-scale production. The M198 offers only a small advantage in range and none in rate of fire of its predecessor, the M114. The only other actions are a product improvement to the M110 (8") for slightly greater range. This slim improvement will be offset by the phasing out of the 175-mm gun, the only standard US artillery piece with a range in excess of 30 KM. See Secy. of Defense Harold Brown, Dept. of Defense Annual Report, FY 1979 (1978) 154-155. (Hereafter cited as Brown, DOD AR FY79).

⁷FM 6-20, Fire Support, III.

⁸Ibid., 2-18.

⁹Jeffrey Record, Sizing Up the Soviet Army, (1975), 24. (Hereafter cited as Record, Sizing Up); and General George S. Brown, US Military Posture for FY 1979 (1978), 102, 104. (Hereafter cited as Brown, Mil Pos for FY79); and Collins, Military Trends, 65.

¹⁰This is discussed in detail in Chapter II of this thesis. See Seymour J. Dietchman, Limited War and American Defense Policy, (1969), 46; and Record, Sizing Up, 39.

¹¹Dietchman, Limited War, 46-47. Here Dietchman writes of the Soviets avowed stance that United States use of any sort of nuclear weapons opens the door to their own use of any size nuclear weapon.

¹²Review of Warsaw Pact maneuver reports failed to reveal any indication that the Soviet Army has radically altered the tactics which proved successful for them in World War II. Current organizations of the Soviet Army would tend to support this conclusion.

¹³Hedrick Smith, The Russians, (1976).

¹⁴Michel Garder, A History of the Soviet Army, (1966). Hereafter cited as Garder, Soviet Army).

¹⁵Arthur A. Ekrich, Jr., The Civilian and the Military: A History of the American Antimilitarist Tradition, (1972, 2d Edition). (Hereafter cited as Ekrich, Civilian and the Military).

¹⁶Robert A. Goldwin(ed), America Armed, (1963).

¹⁷Associates in Political Science, United States Air Force Academy, American Defense Policy, (1965). (Hereafter cited as APS, American Defense Policy).

¹⁸Henry A. Kissinger, American Foreign Policy (1974, Expanded Edition).

¹⁹B.H. Liddell Hart(ed), The Red Army, (1956).

²⁰US Army Command and General Staff College, Course 6 Applied Military History, (1978). (Hereafter cited as USACGSC - 6, Military History).

²¹US Army Intelligence and Threat Analysis Center and BDM Corporation, Soviet Army Operations, (1978). (Hereafter cited as USAITAC/BDM, Soviet Army Operations).

²²Earl F. Ziemke, Stalingrad to Berlin: The German Defeat in the East, (1966). (Hereafter cited as Ziemke, Stalingrad to Berlin).

²³Friedrich Wiener and William J. Lewis, The Warsaw Pact Armies (1977). (Hereafter cited as Wiener and Lewis, Warsaw Pact).

²⁴US Army Command and General Staff College, Reference Book 100-8, Reference Data for Heavy Maneuver Forces, (1978). (Hereafter cited as USACGSC, RB 100-8, Heavy Forces).

CHAPTER II

BACKGROUND

1. Introduction

This chapter contains background information bearing on the thesis problem. It consists of a short discussion of relations between the United States and the Soviet Union since the end of World War II, overviews of the Soviet Army and the United States Army, and a brief examination of the North Atlantic Treaty Organization and Warsaw Pact military balance.

The discussion on the relations of the two countries is not intended to be an inclusive, detailed history of either country since World War II. It will be limited to a discussion of the American commitment to a containment of Communist (that is, Soviet) expansion after the war, nuclear parity, the impact of Vietnam, and finally the shift in American attention to the security of Western Europe.

The overviews of the two armies will be limited to an analysis of four background topics. These topics are the size of the armies, their organizations, their doctrine, and finally, their capability to perform under conditions of general war.

A discussion of the North Atlantic Treaty Organization and Warsaw Pact military balance is necessary to round out the picture. The likelihood of any sort of conflict involving only the United States and the Soviet Union is extremely remote, if not totally unrealistic.

Any discussion of the forces of the two super powers must include some reference to their military allies.

2. Containment, Vietnam, and Europe

Since the end of World War II the Soviet Union has been considered the greatest threat to the security of the United States. For the Soviets the feelings are mutual. The causes of this distrust and animosity between two nations allied against Germany in World War II are numerous, complex and debatable. Many of them stem from ideological and socio-economic differences.¹ These differences help explain the origins of the Cold War which set in after World War II and produced the United States' policy of containment. This policy, first espoused by the Truman Administration in 1947², was designed to prevent Communist expansion into any part of the free world. The structure, deployment capability, and readiness posture of the United States military forces, as the enforcer of this policy of containment, was reflective of the degree of concern about the threat of Communism.

In 1949 this concern was greatly increased when the Soviet Union demonstrated their own nuclear capability. Nuclear supremacy of the United States had been, and would remain throughout the 1950's and 1960's, a cornerstone of the containment policy.³ Throughout most of this period supremacy of the United States in strategic and tactical nuclear weapons was unquestioned. This situation was radically altered in the late 1960's and early 1970's with the Soviet Union's achievement of strategic nuclear parity. The reliance on nuclear weapons to offset the numerical superiority

of the conventional forces of the Soviet Union was no longer a viable policy. In light of this "balance of terror" which now exists, and with indications that both sides in the argument will be extremely reluctant to use nuclear weapons of any sort in a future conflict,⁴ the conventional force levels of the two nations assume increasing importance.

While Western Europe was the focal point of the policy of containment, the United States was committed, by virtue of its leadership of the one camp, to halting Communist aggression throughout the world.⁵ As a result of this "moral" commitment the United States became deeply involved in the defense of Korea and South Vietnam. Involvement in South Vietnam, which began in earnest about 1966, greatly influenced the course of American foreign policy and the way the United States perceived itself as leader of the free world. One of the basic lessons drawn from Vietnam is that containment of Communism on a worldwide basis is difficult, if not impossible.⁶ This conclusion stems from a realization that resources, including the United States peacetime Army, are limited. Related to this whole issue is the question of national will. While the deterrent value of nuclear superiority and strong conventional forces is important, the Soviet conviction that American leaders are willing to commit either of these forces to protect our interests and allies is equally important. This conviction, current in the 1950's and 1960's, reinforced by commitment of American forces to Korea in 1950, actions of the United States in the Berlin Crisis in 1961, and the stand of the American President during the Cuban Missile

Crisis in 1962, has been changed by involvement in Vietnam. The willingness of the United States to commit forces anywhere is seriously questioned today, both in the free world and in the Communist Bloc.⁷ Recent Soviet - backed actions in Angola and Cambodia tend to support this contention. Other factors, such as the possibility of a troop pullout in South Korea and recognition of the People's Republic of China, may continue to raise doubts concerning the commitment of the United States to its longtime allies.⁸

Even though these doubts exist, the United States remains committed to the security of Western Europe. With the United States' withdrawal from South Vietnam, a lion's share of attention has again been focused on the Soviet threat to Europe. There, the situation today is radically different from that of the pre-Vietnam Era. First, there is nuclear parity between the two super powers. Second, the Soviet Army deployed there today is the cumulative result of a 15-year period of continuous upgrading and modernization.⁹ Not only has conventional forces numerical superiority over the United States been maintained, but significant strides have also been made in achieving qualitative superiority in tanks, armored personnel carriers, and artillery.¹⁰ The decided technological superiority enjoyed by the United States for so many years is rapidly being erased, especially in conventional ground weapons systems.¹¹ The United States' big lead in military power simply no longer exists. The late General George S. Brown, while Chairman of the Joint Chiefs in his 1978 report to the Congress stated:

In looking back over my previous reports to you I am struck by the fact that in nearly every area of military strength there has been a relative decline over the years in relation to the Soviet Union...¹²

From this discussion three general conclusions relevant to this thesis may be drawn. First, with regard to parity, nuclear war is highly unlikely, thereby possibly increasing the chances of a conventional conflict between the United States and the Soviet Union. Second, with the improvements in the Soviet Army over the past 15 years, the United States may be at a decided disadvantage in terms of conventional military power. Third, the possible lack (whether real or perceived) of willingness on the part of the United States to stand up to Soviet aggression decreases whatever deterrent value we now possess in the other two areas.¹³ These factors, coupled with current dwindling energy resources and competition for influence in the third world could serve to make confrontation in the European arena a distinct possibility.¹⁴ The situation certainly exists in which the United States Army must be prepared to fight a conventional, mid-intensity war against a well trained, well equipped, numerically superior Soviet military force.

3. Overview of the Soviet Army

For the average Soviet citizen a large standing army is a fact of life. Soviet citizens are constantly reminded of the threat to their homeland from both the East and the West and as a result, many willingly forego many of the comforts of life in order to insure the security of the Motherland.¹⁵ The Soviet people, as a group, remember World War II and its effect on their country. They also remember, with great pride, their resounding victory over Nazi

Germany in that war.¹⁶ Josef Stalin gave the Soviet Army an important share of the credit for defeating the Germans. In fact, he insisted that Soviet arms had defeated the Germans singlehandedly.¹⁷ This line of reasoning, strongly influenced by Stalin's desire for personal credit in the victory, had the immediate effect of establishing the military as a focal point of nationalism and patriotism.¹⁸ The trauma that was invoked in the Soviet people has served to justify the need for a large standing army to prevent another invasion of the Motherland.¹⁹

The post-World War II period can be conveniently divided into three phases in reference to the Soviet Army.²⁰ The first phase, from 1945 to 1953, saw the conventional forces of the Army glorified and, in most respects, modernized.²¹ Under Stalin, even in this nuclear age, emphasis was on the conventional ground forces. He did undertake the development of nuclear weapons, with the first capability displayed in 1949,²² but maintained that their use had not ended traditional forms of warfare as some believed.²³ With Stalin's death in 1953, a new doctrine involving the use of ground forces began to emerge. The Khrushchev Era, from 1953 to 1964, saw the Soviet ground forces relegated to a role subordinate to strategic nuclear weapons.²⁴ Significant reductions in strength of the ground forces were made as a result of this increased emphasis on the primacy of nuclear weapons. Another indicator of the subordinate role of the ground forces was the abolition of the separate command of those forces.²⁵ It should be pointed out, however, that qualitative improvements of the conventional forces continued

during this phase.²⁶ The third phase, under L.I. Brezhnev, brings us to the present, a time witnessing a return to the traditional central role of the Soviet ground forces. The Brezhnev Era has been characterized by two major developments. They are the attainment of strategic nuclear parity with the United States and the growth and modernization of Soviet conventional ground forces.²⁷ This era has seen the addition of twenty combat divisions and the restoration, in 1967, of the separate ground forces command, both indications of the perceived importance of the Soviet Army.²⁸ Nuclear parity has been the principal reason for this return to emphasis on quantitative and qualitative superiority of the ground forces.²⁹ Not insignificant to this emphasis is the emergence of the People's Republic of China as a world power and the ideological rift between that nation and the Soviet Union.

Soviet military writers have reaffirmed their belief in the principles learned in the Great Patriotic War. The foremost principle being "superiority in number of troops always acted as one of the most important premises for victory over the enemy."³⁰ Apparently now that nuclear parity is reality, the Soviets have adopted a strategy wherein the use of nuclear weapons may be a last resort rather than a first resort, and conventional force superiority becomes an important factor in Soviet relations with the West and the East.

The primary instrument of this Soviet strategy is the Soviet Army. The size of the Soviet Army today is one of its most striking characteristics. Its 1.8 million men make it the second largest

standing army in the world, ranking only behind the 2.5 million man force of the People's Republic of China.³¹

The Soviet Army is organized into some 171 combat divisions. These divisions fall into three categories, based on readiness levels. Category I divisions are fully combat ready. Category II divisions are fully equipped and manned at about seventy-five percent strength. Category III divisions are cadre units with about fifty percent of authorized equipment (generally older model) and manned at about a twenty-five percent level.³² Category I and II divisions are of importance to this study as they constitute the ready force. Category I units, ready to fight immediately, numbered some 55 in January 1977. Category II units, which could be ready for combat in a few days, numbered about 32 at the same time.³³

As indicated earlier this large army is justified to the Soviets as a defensive necessity, but an examination of its tactical organizations, doctrine and capabilities will reveal it to be ideally suited for offensive warfare.

The major maneuver units which make up the Soviet Army are the front, army, division, regiment, and battalion.³⁴ The front is a wartime organization. There is no fixed organization for the front, which may contain from two to seven armies, a tactical air army, from one to six separate divisions and appropriate support forces. The front is organized to accomplish a particular operation or phase of an operation. Next in the hierarchy of organization is the army. The Soviets have designated two types of armies, the combined arms army and the tank army. The combined arms army will usually have a

preponderance of motorized rifle divisions, while the tank army will be tank division heavy. Either type will contain from three to seven divisions and the necessary combat support forces.

The basic maneuver organization in the Soviet Army, like the United States Army is the division. Types of combat divisions are the motorized rifle, tank and airborne. Table 1 depicts selected division characteristics which are important to this study.³⁵ (For a comparison with US Army divisions see Table 3, this chapter.)

TABLE 1							
SOVIET ARMY DIVISION CHARACTERISTICS							
Type Div.	Approx. Number Cat. I and II	Maneuver Battalions I M T	Approx. Pers. Strength	Medium Tanks	Inf. Combat Vehicles	Artillery Hvy. Mortars	AT Weapons
Tank	32	0 3 10	9,500	325	163	82/18	146
Motorized Rifle	48	0 9 7	12,500	266	310	130/54	340
Airborne	7	9 0 0	8,000	0	126	36/18	475

The regiment is an organic unit of the division. The motorized rifle regiment is composed of three rifle battalions, a tank battalion, an artillery battalion and support troops. The tank regiment, organic to both the motorized rifle and tank divisions, will have three tank battalions, and in the tank division, a motorized rifle company, as well as support troops. The airborne regiment, organic to the airborne division, contains three parachute battalions, a company of 40 Airborne Assault Combat Vehicles, and support troops.

The battalion is an organic unit of the maneuver regiment. Battalions are classified either as motorized rifle, tank, or airborne. Selected characteristics of Soviet maneuver battalions are

shown in Table 2. (For a comparison with US Army battalions, see Table 4, this chapter.)³⁶

Type	Approximate Pers. Strength	Medium Tanks	Inf. Combat Vehicles	AT Weapons
Tank (MRD)	215	41	3	0
Tank (Tank Div)	179	31	3	0
Tank (Indep)	321	51	3	0
Motorized Rifle	407	0	31	31
Airborne	350	0	13	11

The doctrine concerning the employment of this large standing Army centers around the offense. The importance of the offense is stressed in all Soviet military writings.³⁷ Offensive doctrine calls for surprise, maneuver, and above all, mass.³⁸ Not only is the offense seen as the primary role of the ground forces, but stress is placed on lighting war, the blitzkrieg, as perfected by the Germans in World War II. This form of offense is designed for deep penetration by the first echelon with follow-on destruction of the defender by the second echelon force.³⁹ The emphasis on tanks, mechanized infantry, airmobile troops, engineer bridging equipment, and more recently, self-propelled artillery pieces⁴⁰ all contribute to the Soviet Army's offensive capability. There is no defensive orientation in the blitzkrieg doctrine, the 50,000 tanks, the 28,000 artillery pieces,⁴¹ or the total mechanization of all infantry forces.

In addition, Soviet military writers deride the defense as "a forced and temporary form of combat action," and further "a side which only defends is inevitably doomed to defeat."⁴² The Soviet Army is manned, equipped and trained to execute offensive operations.

Since World War II the Soviets have pursued a fairly conservative foreign policy. Perhaps now with strategic nuclear parity with the United States, numerically superior conventional forces and a feeling that the American Era has ended,⁴³ this policy could assume a more radical and aggressive nature. If the political leaders of the Soviet Union do decide to exercise their new found power, the US and NATO allies must be prepared to meet a formidable opponent.⁴⁴

4. Overview of the US Army

Americans have traditionally opposed a large standing army.⁴⁵ Much of this opposition stemmed from the isolated position of the United States, which for much of its history has not suffered or feared invasions as have other countries.⁴⁶ For whatever reasons, a relatively small peacetime army is a tradition in the United States.⁴⁷

The end of World War II saw the emergence of the United States as a world power, which essentially guaranteed that there would not be a return to the extremely small peacetime army which had existed before the war.⁴⁸ The role of the American military in the Cold War Era has been to serve the interests of American defense policy. In large part, one element of that policy, containment, has sized and shaped American military forces to respond to the Communist threat for the past thirty-three years. The ebb and flow

of the Army's importance can be divided into three fairly distinct phases.

From 1945 to 1953, containment of Soviet expansion was primarily seen as a role for conventional forces backed up by nuclear weapons. This phase was typified by significant conventional force levels maintained by the United States and a clear nuclear superiority over the Soviet Union.⁴⁹ After the Soviets demonstrated their own nuclear capability in 1949, fear of an all out Soviet nuclear attack on the US increased to the point at which President Eisenhower's policy of "massive retaliation" was formalized in 1953.⁵⁰ This policy called for primary reliance on nuclear weapons to deter Communist aggression and defend the United States.⁵¹ In effect nuclear power was substituted for manpower. Significant conventional force cuts were made and the Army was relegated to a secondary role to strategic nuclear weapons.⁵² The PENTOMIC division, a hodge-podge of units loosely organized around the theory that less is better in a nuclear environment typified this period.⁵³

The policy of massive retaliation implied an all or nothing stance in dealing with the Soviet Union. Criticism of this policy resulted in the Kennedy Administration adopting the policy of "flexible response" in 1961.⁵⁴ Flexible response, in essence, dictated that the US Army had to be equally effective in a conventional or nuclear environment. This policy has remained in effect, under other titles, to the present day. It gives the Army an equally important role in the defense of the country along with strategic and tactical nuclear weapons.⁵⁵

A basic tenet of flexible response as it exists today is that of sufficiency of both nuclear weapons and conventional forces. Sufficiency is a difficult term to define and equally difficult to put into practice. We will know if our forces are sufficient only when they are put to the acid test.

The 772,000 person active Army is organized into sixteen combat divisions, four separate infantry brigades, three armored cavalry regiments, an air cavalry combat brigade, and supporting troops. Worthy of mention here are the three Marine Corps divisions which represent a significant portion of the conventional land forces of the United States. Within the current force structure nine divisions fall in the "heavy" category of mechanized infantry and armor, five are light infantry, and there is one airborne and one airmobile division.⁵⁶ According to the Department of Defense Annual Report for Fiscal Year 1979, one light infantry division is scheduled for conversion to heavy in 1979. Additional conversions of light to heavy divisions will occur in the next five years because of the primary orientation toward war in Europe.⁵⁷

The reserve forces of the United States, which include the Army Reserve and the National Guard, add an additional eight divisions and twenty-four separate brigades to the active force in a national emergency.⁵⁸ Estimates vary widely on the length of time required to activate and deploy these reserve forces. Suffice it to say that they would not be a factor in a war of short duration as envisioned in Europe. In essence, the forces on hand in Europe, with some reinforcement from US based active units, would have to bear the burden

of fighting.⁵⁹

The major tactical organizations of the US Army are the corps, division, brigade, and battalion. The corps is the principal combat force in a theater of operations. It does not have a fixed organization, and will be categorized as light or heavy, depending on the composition of its subordinate divisions. The corps may have from two to five divisions and necessary support forces. The primary self-contained maneuver unit in the US Army is the division. It will consist of three brigade headquarters for command and control of assigned maneuver battalions and support forces. Table 3 depicts selected characteristics of US divisions.⁶⁰

TABLE 3									
<u>US DIVISION CHARACTERISTICS</u>									
<u>Type Div.</u>	<u>Number</u> ¹	<u>Maneuver Battalions</u>			<u>Approximate Pers. Strength</u>	<u>Medium Tanks</u>	<u>Infantry Vehicles</u>	<u>Artillery/ Heavy Mortars</u>	<u>AT Weapons</u>
		<u>I</u>	<u>M</u>	<u>T</u>					
Infantry	5	8	1	1	17,000	54	90	76/40	366 ³
Mech. Inf.	5	0	6	5	18,000	252	490	66/49	422
Armor	4	0	5	7	18,000	360	450	66/53	376
Airborne	1	9	0	1	16,000	0	0	54/40	417
Air Assault	1	9	0	0	18,000	0	0	72/0	372
Marine Corps ²	3	9	0	1	19,830	70	187	102	288

NOTES:

1. Current active force.
2. Marine Corps is included as it represents a significant share of conventional ground forces.
3. Does not include the M72 Light Antitank Weapon (LAW).

Next in the hierarchy of command is the brigade. Army brigades assigned to divisions are tactical headquarters around which subordinate battalions (from two to seven) may be assigned depending on the

mission. Separate brigades and armored cavalry regiments have additional support troops assigned for staying power. The battalion is the next lower level maneuver unit and generally contains three maneuver companies. A feature of maneuver battalions is the ability to cross-attach subordinate companies into a task force configuration (for example a tank company attached to a mechanized infantry battalion) to enhance combat power. Selective characteristics of American maneuver battalions are shown in Table 4.⁶¹

TABLE 4				
<u>US ARMY BATTALION CHARACTERISTICS</u>				
<u>Type</u>	<u>Approximate Pers. Strength</u>	<u>Medium Tanks</u>	<u>Infantry Vehicles</u>	<u>AT Weapons*</u>
Armor	540	54	18	8
Mech. Inf.	836	0	72	62
Infantry	813	0	0	45
Airborne	740	0	0	32
Air Assault	742	0	0	54
Armd Cav. Sqdn. (Div.)	859	36	66	38
Armd Cav. Sqdn. (Regt.)	936	53	58	36

*Does not include the M72 Light Antitank Weapon (LAW)

The principal doctrine for the US Army today is centered around the defense. FM 100-5, the current doctrinal capstone publication of the Army, stresses the defense because of the numerical superiority likely to be faced. This is not the classic defense, but the "active defense". Tactically, this defense calls for concentrating forces along the most likely avenues of approach of the attacking

force, moving elements around in the battle area from less to more critical points, fighting far forward, and using successive defensive positions in depth.⁶² Of equal importance in the active defense is offensive action on a limited scale to disrupt the enemy's offensive, and, once numerical superiority is achieved, to defeat him.⁶³ What has been described is how this form of defense is tactically intended to be used. How it is envisioned to be used in Europe is proving to be another matter altogether. One essential ingredient of the active defense is the ability to move the defending forces freely around the battlefield, both laterally and in depth. Political and strategic considerations in Western Europe, however, will not allow giving up either terrain or vital communications centers, as might be called for in order to retain this advantage. The operative phrase in the defense as employed by North Atlantic Treaty forces is "defend well forward." This translates to placing all available forces far forward in an attempt to stop the attacker. Such employment of forces, reminiscent of the Maginot line in World War II, removes many of the advantages of the active defense and makes the defending forces susceptible to defeat by an attacking armored force using blitzkrieg tactics.⁶⁴

With the force ratio as they currently exist the United States Army has little choice but to stress the defense. Being significantly outnumbered takes away the propensity to attack, and limits initiative.

The United States Army, in concert with its North Atlantic Treaty Allies, has the capability to execute the current doctrinal

defense. In effect there are few other choices. Strategic and tactical nuclear deterrents may now be inadequate which places additional burdens on the conventional forces. The United States must look toward having a strong conventional deterrent to the growing conventional military power of the Soviet Union. One method of maintaining this deterrent in the post-war years has been the alliance system.

5. NATO and the Warsaw Pact: The Military Balance

Thus far force comparisons have been limited to those of the United States and the Soviet Union. It would be misleading and unrealistic to discuss these forces in isolation without discussing the military forces of nations which make up the North Atlantic Treaty Organization and the Warsaw Pact. This section will look briefly at these alliances from a purely military point of view and discuss the military balance.

The North Atlantic Treaty was signed in 1949, as a commitment by the signatories to consult together if the security of any member is threatened. Initial signatories were Belgium, Great Britain, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal and the United States. Greece and Turkey joined the organization in 1952, and West Germany joined in 1955.⁶⁵ The withdrawal of France in 1966 from active commitment of military forces reduced to fourteen the total member nations which contribute military forces to the NATO command structure in wartime.⁶⁶ Table 5 compares the total conventional ground forces of NATO with that of the Warsaw Pact nations.

TABLE 5
THE MILITARY BALANCE - NATO AND WARSAW PACT NATIONS
CONVENTIONAL GROUND FORCES (1978)*

Element	NATO	Warsaw Pact
Divisions**	102	231
Tanks	22,500	57,400
Artillery/Hvy Mortars	15,900	35,400
Inf. Fighting Vehicles	45,550	50,950
Active Manpower	2,512,000	2,625,000
Reserves	3,338,000	6,935,000
Population (Estimate)	560 Million	363 Million
GNP (1976 Estimate)	\$3,135.6 Billion	482.2 Billion

*This table represents the total ground forces of the member nations and not the forces arrayed in Central Europe. Figures are based on data derived from Int'l Institute for Strategic Studies, The Military Balance 1976-1977, (1976), 3-6, 8-9, 12-14, and 18-25. Some figures are approximations based on the best data available. In every case where doubt existed the lower figure was used or a reasonable estimate made.

**Division or division equivalent active combat forces.

The principal military commands of NATO are the Allied Command Europe (ACE), Allied Command Atlantic (ACLANT), and Allied Command Channel (ACCHAN). The Supreme Allied Commander Europe (SACEUR) and the Supreme Allied Commander Atlantic (SACLANT) have traditionally been Americans, while their Deputy Commanders and the Commander in Chief Channel (CINCHAN) have been British.⁶⁷

The Warsaw Pact military alliance was signed in Warsaw, Poland in 1955 by the Soviet Union, Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Romania. The Pact nations are committed to the defense of the member states' European territories.⁶⁸

The withdrawal of Albania in 1968 reduces to seven the number of member nations, all located in Eastern Europe.

The principal military commands of the Warsaw Pact are the Council of Defense Ministers (composed of all member nations' defense ministers), The Joint High Command, the Northern Group of Forces (Legnica, Poland), the Southern Group of Forces (Budapest), the Group of Soviet Forces Germany (Zossen-Wuensdorf, near Berlin), and the Central Group of Forces (Milovice, Czechoslovakia).⁶⁹

Table 6 shows the current forces array in Europe of both the North Atlantic Treaty and Warsaw Pact.

TABLE 6				
THE MILITARY BALANCE IN EUROPE CONVENTIONAL GROUND FORCES (1978)*				
	Northern & Central Europe		Southern Europe	
	NATO	Warsaw Pact	NATO	Warsaw Pact
Divisions**	27	70	37	33
Tanks	7,000	21,100	4,300	6,800
Artillery	2,500	7,000	4,000	3,000
Combat	626,000	943,000	550,000	388,000

*This data is from "NATO and the Warsaw Pact -- An Assessment", Military Review, September 1978, p. 34-42, by Colonel Phil Stevens. Some of the figures are approximations. Where any doubt existed concerning numbers, the lower figure was used.

**Division or division equivalent active combat forces.

The capacity of the alliance system of either side to support a conflict in Europe, with the inherent problems of multinational forces and command structures, is a highly debatable topic. From the data presented it is obvious that the population base and gross national product (representative of the industrial base) favor

the North Atlantic Treaty countries while the active military forces on the ground and war making materials favor the Warsaw Pact nations. Again, a number of other factors, such as logistics, national will, cohesiveness of effort by either side, length of conflict, and so forth, must be considered. General Alexander M. Haig, Jr., the Supreme Allied Commander, in testimony before the Senate Armed Forces Committee summed it up as follows:

...deficiencies in our conventional posture are currently the most greivous...nothing our European commanders can do will compensate for insufficient levels of manpower and equipment; for sustaining capabilities inadequate to the demands of today's intense and lethal battle-field; or for the density and availability of reinforcement through which to guard against the high rates of attrition our assessment tells us we can anticipate...⁷⁰

With this background information on the force levels of both the Soviet Union and the United States and their respective allies, it is time to turn attention to the focal point of this thesis, Soviet conventional forces artillery.

ENDNOTES

CHAPTER II

¹For discussions and thoughts on this topic there are numerous sources. I will cite three. Cecil V. Crabb, American Foreign Policy in the Nuclear Age, (3d ed), (1972), 190-203; William Zimmerman, Soviet Perspectives on International Relations 1956-1967, (1969), 82-106; Kissinger, American Foreign Policy, 139-144.

²LTC Keith A. Barlow, "The Strategy of Massive Retaliation", Military Strategy, Vol. II, as reproduced in USACGSC - 6, Military History, N-3.

³Russell F. Weigley, American Way of War, (1973), 468-470.

⁴Department of State Special Report Number 46, The Strategic Arms Limitations Talks, (1978), 10.

⁵Joseph Cropsey, "The Moral Basis of International Action", America Armed, (1969), 71-72.

⁶Robert W. Tucker, "Beyond Detente", Commentary, (March 1977), 42-50.

⁷Ibid., 50.; Collins, Military Trends, xi; and Anthony Bouscaren (Editor), All Quiet on the Eastern Front, (1977), 42-59.

⁸Mary McGrory, "China Deal Scrutinized", Kansas City Times, (Feb 12, 1979), Page 9A (Washington Star Syndicate, Inc. Copyrighted Story).

⁹Brown, DOD AR FY79, 19-21, 34; Collins, Military Trends, 1.

¹⁰Record, Sizing Up, 24-25; and Collins, Military Trends, 65.

¹¹Record, Sizing Up, 24; and Brown, Mil Pos for FY79, 102, 104.

¹²Brown, Mil Pos for FY79, 1.

¹³Tucker, "Beyond Detente", Commentary, 50.

¹⁴Ibid.

¹⁵Smith, The Russians, 418-419.

¹⁶Ibid. 405.

¹⁷Gardner, Soviet Army, 119.

¹⁸Smith, The Russians, 418-419.

¹⁹Ibid., and Garder, Soviet Army, 136. Garder signals the signing of the NATO alliance in 1949 as "capitalist encirclement" to the Russian leaders and people.

²⁰Record, Sizing Up, 2-7.

²¹Col. Louis B. Ely "A General Assessment" in Liddell Hart, Red Army, 197-212. Ely cites improvements and modernization in supply transport, communications, maintenance, military education, and new equipment (both quality and quantity).

²²Record, Sizing Up, 3.

²³Malcolm Mackintosh, Juggernaut: A History of the Soviet Armed Forces (1967), 278.

²⁴Record, Sizing Up, 3-5; and Garder, Soviet Army, 142-143, 147-149.

²⁵Record, Sizing Up, 6.

²⁶Ibid.

²⁷An excellent work on this subject, which I used for much of the current data on size and structure of the Soviet Army, is Collins, Military Trends.

²⁸Record, Sizing Up, 6.

²⁹Ibid., 38-41.

³⁰V.Y. Savkin, The Basic Principles of Operational Arts and Tactics, (1974), 91.

³¹Brown, DOD AR FY79, 75; and Record, Sizing Up, 9.

³²Record, Sizing Up, 21-22.

³³Debates on the exact number of these units are endless. My source is Collins, Trends, (1978). Other sources such as Record, Sizing Up, list 56 and 57 respectively for a total of 113 (p. 22) as of 1975. Collins source was personal discussions with DIA officials in January 1977. These figures are cited here to give the reader an appreciation of the readily available combat power of the Soviet Union. Total structure would be something like this: Category I - 55; Category II - 32; and Category III - 84.

³⁴My two principal sources for data concerning these major organizations are USAITAC/BDM, Soviet Army Operations (1978) and Collins, Military Trends, (1978) which are about as current and reliable as any unclassified sources.

³⁵Data for Table 1 is extracted from Collins, Military Trends, 179, 197-199, with an update of some figures from CACDA, HB 550-2, 2-1 to 2-14.

³⁶Ibid., and USAITAC/BDM, Soviet Army Operations.

³⁷Record, Sizing Up, 33.

³⁸See the earlier quote (footnote 30) on the importance of superiority in number of troops from Savkin, Basic Principles, 91.

³⁹Sidorenko, The Offensive, 143.

⁴⁰SP artillery was used by the Soviets in WW II in a very crude form. (See John Batchelor and Ian Hogg, Artillery, 121-122. The latest 122-mm and 152-mm SP artillery pieces are a marked improvement.

⁴¹Collins, Military Trends, 185-186.

⁴²Savkin, Basic Principles, (1974), 241-242.

⁴³Congressman John B. Breckinridge in introduction to Collins, Military Trends, xi.

⁴⁴Tucker, "Beyond Detente", Commentary, 50.

⁴⁵A critical work on the military in the US is Arthur A. Ekrich, Jr., The Civilian and The Military, A History of the American Antimilitarist Tradition, (1972, 2d Edition).

⁴⁶Ekrich, Civilian and the Military, xv.

⁴⁷Ibid.

⁴⁸Peter Calvocoressi and Guy Wint, Total War, (1972), 842-843.

⁴⁹LTC Keith A. Barlow, "The Strategy of Massive Retaliation", Military Strategy Vol. II, as reproduced in USACGSC - 6, Military History, N-3 to N-4. The principal reason for the large conventional forces was the Korean War. I believe this strengthens the argument that conventional forces were in the forefront in that time frame because nuclear weapons were not used.

⁵⁰Ibid., N-8.

⁵¹Ibid.

⁵²Ibid., N-9.

⁵³The PENTOMIC division was composed of a division headquarters, three battle groups and companies. Little transport was provided, manpower was limited (12,000), frontages were increased, and almost no capacity to support itself was provided. It was short lived as military organizations go.

⁵⁴Barlow, "Strategy of Massive Retaliation", As reprinted in USACGSC-6, Mil History, N-2.

⁵⁵LTC Peter F. Wittried, "The Strategy of Flexible Response", Military Strategy, Vol. II, as reprinted in USACGSC-6, Military History, 0-5 to 0-8.

⁵⁶Brown, DOD Annual Report FY79, 140-142.

⁵⁷Ibid., 141.

⁵⁸Ibid., 142.

⁵⁹Brown, Mil Posture for FY79, 108, 114.

⁶⁰Data for Table 3 is extracted from Collins, Military Trends, 179, 197-199.

⁶¹Data for Table 4 is extracted from USACGSC, RB 100-8 Heavy Forces, Throughout.

⁶²US Army, Field Manual 100-5, Operations, (1976), Chapters 3 and 5. (Hereafter cited as FM 100-5 Operations.)

⁶³Ibid., 4-2, 5-14.

⁶⁴An excellent discussion of this subject is LTC Steven L. Canby, "NATO Strategy: Political-Military Problems of Divergent Interests and Operational Concept", Military Review, (April 1979), 50-58.

⁶⁵International Institute for Strategic Studies, The Military Balance 1976-1977, (1976), 15. (Hereafter cited as IISS, Military Balance 76-77.)

⁶⁶Ibid.

⁶⁷Ibid., 15-16. For a full discussion of the NATO command structure see this reference or Collins, Military Trends, 323-326.

⁶⁸IISS, Military Balance 76-77, 11.

⁶⁹Ibid., For a full discussion of the Warsaw Pact command structure see this reference or Collins, Military Trends, 327-329.

⁷⁰Col. Phil Stevens, "NATO and the Warsaw Pact -- An Assessment", Military Review, (September 1978), 40.

"Artilleriia - Bog Voiny"
("Artillery - The God of War")
Attributed to Stalin, 1944

CHAPTER III

SOVIET ARTILLERY

1. Introduction

In January 1945, Marshal G.K. Zhukov's 1st Belorussian Front launched an attack on the Germans at Vislo-Oder with a 25-minute preparation from 7,600 artillery pieces concentrating their fires on a 33-kilometer breakthrough point.¹ Marshal Zhukov appraised the effects of his artillery fire: "This method...dependably assured the breakthrough of the enemy defense. The enemy suffered heavy losses. Individual companies...in the trenches of the first defensive zone were almost completely destroyed."²

This is an example of the importance the Soviets ascribe to artillery. Their offensive doctrine calls for artillery preparations of short duration, in massive volume either concentrated on breakthrough points or dispersed throughout the defensive sector.³ Achievement of these objectives requires not only a numerical superiority in artillery pieces, but also pieces having long range and rapid rate of fire. Above all, the Soviets stress the importance of thoroughly integrated fire and maneuver plans.

This chapter focuses on the capability of Soviet artillery to accomplish its role in the offense. Topical coverage includes an examination of the numbers and characteristics of artillery wea-

pons in current Soviet use. Next, our survey shifts to a brief look at artillery organization from the front to the motorized rifle regiment. Finally, the chapter concludes with an overview of artillery tactics in the offense, with particular attention to task organizing for combat and fire planning.

2. Weapons Systems⁴

The Soviet Army has more than 21,000 artillery pieces and in excess of 7,000 heavy mortars at its disposal.⁵ These are rugged and durable weapons of simple design, in part because the peasant soldier has not always adopted well to such sophisticated tasks as those of the field artillery.⁶ Artillery design has traditionally stressed simple towed weapons, but these can be a liability in the sort of offensive operations envisioned. Recently, however, the Soviets have departed from this tradition of simplicity with the introduction of self-propelled 122-mm and 152-mm weapons.⁷ From a maintenance and operation viewpoint, these are more complicated systems. This transition seems to indicate that there is now more technical competence at the lower levels (or will be) in the artillery, and that Soviet military leaders are well aware of the shortcomings of towed artillery in fast moving offensive operations.

A peculiarity of the Soviets is that even with the introduction of more sophisticated and effective systems such as self-propelled weapons, older systems are retained, and either placed in Category III divisions or turned over to Warsaw Pact Armies.⁸ The net result is a continuous increase in quality on the one hand and total quantity of basic rugged design weapons on the other.

Some of the more important characteristics of Soviet weapons include excellent range and rate of fire. How these characteristics will possibly affect any future artillery exchange is shown by the following example. In a hypothetical situation featuring a maximum rate of fire duel for two minutes between a Soviet 152-mm battalion and an American 155-mm battalion, the Soviets would be able to deliver 216 rounds as opposed to the Americans 144. Even this 66 percent capability of the US battalion as compared to its Soviet counterpart is contingent upon two other factors. The first is that the Soviet battalion is within range of the American battalion. The second is that the American weapons can sustain their short period rate of fire of 4 rounds per minute.⁹

Table 7 lists selected characteristics of Soviet weapons systems,¹⁰ (For a comparison with American artillery see Table 9, Chapter IV).

TABLE 7
SOVIET ARTILLERY WEAPONS

Weapon	Ammunition	Range (KM)	Max Rate of Fire	Projectile Weight (lbs)
120-mm Mortar M-43	HE, INCENDARY, SMOKE	5.7	6-7 rounds per minute	35
240-mm Mortar M-53	HE, SMOKE, NUCLEAR(?)	9.7	1 round per minute	287
122-mm HOW, TOWED, D-30	HEAT, HE, ILLUM, SMOKE	15.3	8 rounds per minute	48
122-mm Field Gun, TOWED, D-74	HE, APHE	24	6-7 rounds per minute	55
a/122-mm HOW (Field Gun) SP, M-1974	HEAT, HE, ILLUM, SMOKE	15.3 (24)	6-7 rounds per minute	48 (55)
130-mm Field Gun, TOWED, M-46	HE, APHE, ILLUM	27	6 rounds per minute	74
b/152-mm Gun-How, SP, M-1973	HE, APHE, NUCLEAR(?)	18.5 (30)	5-6 rounds per minute	96
-152-mm Gun-How, TOWED, D-20	HE, APHE	18.5	5-6 rounds per minute	96
180-mm Gun-How, TOWED, S-23	HE, NUCLEAR(?)	30	1 round per minute	200
203-mm Gun-How, TOWED, M-55	HE, NUCLEAR(?)	29.2	.5 rounds per minute	225
122-mm MRL BM-21 (Ven Mtd)	HE, Chemical	20.5	40	101(warhead)
Free Rocket Over Ground, FROG-7 (550-mm)	HE, Chemical, NUCLEAR	60	Reload of Launch Dependent	990(warhead)

a/The M-1974 carriage may mount either the 122-mm howitzer tube or the longer range 122-mm gun tube. Data shown initially for the howitzer and in parentheses for the gun.

b/The M-1973 may have a rocket assisted projectile which increases the maximum range to in excess of 30 KM (from Wiener, Warsaw Pact Armies, 377).

Some of these weapons, which are likely to be encountered in large numbers on the battlefield, are worthy of special mention here. The D-30 122-mm howitzer with a range in excess of 15 kilometers is the workhorse of the Soviet artillery. It is found in all maneuver divi-

sions and the motorized rifle regiment. It is a towed weapon which is being replaced by the self-propelled M-1974 122-mm howitzer in many Category I divisions.¹¹ The D-20 152-mm gun/howitzer has a maximum range in excess of 18 kilometers, and a maximum rate of fire of 5 rounds per minute. It is being replaced by the M-1973 self-propelled 152-mm gun/howitzer. The M-46 130-mm field gun, with a range in excess of 27 kilometers, and a maximum rate of fire of 6 rounds per minute, is an excellent counterbattery weapon. The United States Army has no equivalent system.

The BM-21 122-mm multiple rocket launcher is a truck-mounted area fire weapon capable of firing 40 rockets from each launcher at ranges in excess of 20 kilometers. The 10-minute reload time means that each battalion of 18 launchers can deliver the devastating area fire of 720 rockets every 10 minutes or less. The US Army has no system in the field to match these capabilities.

The FROG-7 is the latest in a series of Soviet free rocket over ground weapons. It is fired from a transport launch vehicle, and has a range of 60 kilometers.

All these weapons are parts of a system developed to fit a tactical doctrine. With the exception of the limitations imposed by the towed weapons, which are being gradually overcome, all Soviet weapons are exceptionally suited to the offense. The next section will undertake a survey of the organizations that control these weapons.

3. Organizations

Artillery organizations are integrated with maneuver ele-

ments at every level of command from the front down to the motorized rifle regiment. Table 8 is a simplified illustration of typical artillery organizations, along with the maneuver units they support.¹² (For a comparison with US organizations see Table 10, Chapter IV).

<u>Maneuver Element</u>	<u>Artillery Headquarters</u>	<u>Subordinate Artillery Battalions</u>	<u>Weapons Per Battalion</u>
Front	Artillery Division (with 2 to 4 Regimental Headquarters)	12 or more of medium artillery, guns, and mortars (130-mm, 152-mm, 180-mm and/or 240-mm mortars)	18
Army	Artillery Regiment	3 130-mm and 152-mm (in some cases heavier 180-mm or 240-mm mortars)	18
Motorized Rifle Division	Artillery Regiment	2 122-mm 1 152-mm 1 MRL 1 FROG-7	18 18 18 4
Tank Division	Artillery Regiment	3 122-mm 1 MRL 1 FROG-7	18 18 4
Airborne Division	Artillery Regiment	1 122-mm 3 120-mm mortar batteries 1 MRL	18 6 per battery 18
Motorized Rifle Regiment	Artillery Battalion	122-mm 3 120-mm mortar batteries	18 6 per battery
Tank Regiment	No organic artillery		
Airborne Regiment	No organic artillery		

The Soviets ascribe special significance to large artillery organizations. To facilitate later discussion of Soviet artillery tactics, those organizations that are most important will be briefly noted.

An artillery division will be found at the Soviet front level. Such a division is primarily an administrative command to control sub-

ordinate artillery organizations and to conduct fire planning for front operations. The artillery division is a dynamic organization, generally assigned 12 or more battalions, depending upon the mission assigned the front it is supporting. These may include 180-mm gun battalions, and/or 240-mm mortar battalions, but as a general rule the preponderance would be weighted in favor of 130-mm and 152-mm battalions.¹³

Control of artillery in the army is exercised by the artillery regiment.¹⁴ This regiment will normally consist of 3 battalions of mixed caliber weapons, the actual mixture based on the mission of the army. Generally, these are 130-mm and 152-mm battalions, although other calibers may be present. The artillery regiment plans and coordinates all indirect fires to support the army maneuver plan.

Each maneuver division has its own organic artillery. Control of this organic artillery is exercised by the division artillery regiment, which also plans and coordinates the fires of the artillery to support the maneuver plan. The motorized rifle division artillery consists of two 122-mm battalions, a 152-mm battalion, a multiple rocket launcher battalion and a FROG-7 battalion. The tank division composition is the same with the exception that it is sometimes given another 122-mm battalion instead of the 152-mm battalion.¹⁵ The airborne division artillery consists of a 122-mm battalion and a multiple rocket launcher battalion.* Additional artillery support in the airborne division is provided by three batteries of 120-mm mortars. As a further indication of the Soviet emphasis on integrating artillery at all maneuver levels, each motorized rifle regiment is assigned an

*This MRL battalion will be a 140-mm RPU-14 which has a maximum range of 9,810 meters and fires a 16 round volley.

organic 122-mm battalion, and three 120-mm mortar batteries.

Soviet artillery battalions consist of three firing batteries of 6 guns each. The FROG battalion is an exception in that it has two batteries, each with two rocket launchers. Target acquisition capabilities exist in the artillery division and regiment¹⁶, and support elements are organic to all artillery organizations.¹⁷

The organization of these artillery units provides a great deal of flexibility to the maneuver commander in the execution of his offensive plan. Artillery unit headquarters are plentiful, with apparently few functions at the front, division and regiment level, save fire planning and coordinating to support the maneuver plan. These two features, flexibility and command and control capability of artillery at every maneuver level should assist in achieving mass at selected points, a Soviet dictum for the offense.¹⁸ The next section affords an examination of how this principle is applied by the Soviet artillery.

4. Tactics In The Offense

One of the Soviet tactical commander's objectives in the offense is to achieve and sustain rapid movement of his combat forces. High tempo, the relentless prosecution of an operation, is designed to keep the enemy off balance and under constant pressure.¹⁹ The goal is to concentrate troops and weapons on a small frontage and create a breach in the enemy's defenses for further exploitation to the rear.²⁰ The objective of this concentration of forces and fire support is to achieve favorable ratios for the attacker. Soviet artillery plays a key role in the achievement of mass. Just how key is indicated by the following Soviet principles: "The artillery destroys and the infantry

overruns", and "the artillery seizes and the infantry occupies."²¹ More than any other arm, the artillery has the ability to provide concentrated, overwhelming fires from widely separated areas, and artillery remains the means with which the Soviet commander expects to create the breaches through which his armored and motorized infantry will advance into the rear.²²

One method used by the Soviets to achieve mass is through organizing and physically locating artillery elements together under the control of the senior artillery commander. Generally, Soviet artillery is organized for combat by establishing temporary, mission-oriented groupings of artillery. Artillery groups normally consist of from two to four battalions, and may include any combination of tube artillery, multiple rocket launchers, and mortars.²³ Essentially, the following principles apply in organizing for combat:²⁴

(1) Front and army allocate their organic artillery battalions to first echelon divisions in proportion to the importance of the division mission.

(2) Division will allocate organic and attached artillery to leading regiments, with emphasis on the unit(s) making the main attack.

(3) Motorized rifle regiments retain their organic artillery.

(4) Second echelon divisional artillery may augment the fires of the first echelon divisional artillery.

The application of these principles results in three types of groupings. The first, the army artillery group, may be formed and given the primary counterfire mission for the army.²⁵ This group would be made up of artillery battalions not allocated to the divisions and

generally would consist of 180-mm or 130-mm battalions. The second, the division artillery group, would be formed from battalions not allocated to the regiments. The division artillery group may include two to four battalions, an array generally containing a 130-mm battalion, the multiple rocket launcher battalion and the FROG battalion.²⁶ Finally, regimental artillery groups are formed from organic and attached artillery, generally 122-mm and 152-mm battalions. They are assigned to the regiments to provide close support and such groups are normally composed of two to four battalions.²⁷

Attached or supporting command relationships govern the control of these groups.²⁸ "Attached" means that the artillery unit is under the operational control of the maneuver commander. However, if the artillery unit is assigned a supporting mission, then that unit remains subordinate to its parent artillery headquarters, specifically for fire planning purposes.

The process of fire planning to support the maneuver force includes five distinct elements. These elements are target acquisition, organization for combat, assignment of tactical missions, establishment of ammunition requirements, and the formulation of a detailed fire plan.²⁹ The fire plan involves the integration of all artillery assets and is functionally based on the artillery groups described earlier. The fires of all the groupings are incorporated into the army or front fire support plan and the artillery unit commander at every level controls his own fires.³⁰ Of principal concern here is the fact that all indirect fires, including tactical air support, are included in a single, coordinated plan. After the breakthrough is

facilitated by the massing of artillery fire at the critical point Soviet doctrine calls for the artillery to fire throughout the defensive area.³¹ Target priorities for fires are then 1) nuclear capable units and control systems; 2) command posts, observation posts, communications and radar stations; 3) defensive strongpoints, especially anti-tank weapons positions; 4) conventional artillery and air defense units; and 5) reserves and service support units.³² These target priorities differ from that of US artillery which is primarily concentrated against enemy infantry and tanks. Note that artillery assets rank high on the list of priorities.

Another method available to the Soviets to achieve massed fires is at the fire direction center. For many years it was accepted by most analysts that the only way Soviet artillery could mass fires was to deploy weapons "hub to hub", that is to place all the pieces together and thereby achieve massed fires.³³ Recent examinations of command and control assets, survey assets, and technical fire direction assets, reveal a sophisticated, highly advanced artillery system that matches the capabilities of most of the Western armies. These revelations, and the Soviets own profession of the importance of massed fires, should prove to even the most dubious that the Soviets can indeed mass fires at the fire direction center.³⁴

This discussion of Soviet artillery tactics should establish the importance ascribed to that arm as one of the major contributors to successful offensive operations.

5. Summary

This examination of Soviet artillery weapons, organizations,

and tactics shows that the role of the artillery is clearly defined and the numbers of weapons are available to implement the doctrine. Emphasis is always placed on the integration and concentration of firepower to achieve overwhelming numerical superiority over the defender. The Soviets clearly have the artillery assets to execute vigorous and dynamic offensive operations, and just as clearly, they know how to use those assets. Likewise, because of the superior range and rate of fire characteristics of their weapons, and the large numbers available, the Soviet artillery could assist in the execution of tenacious defensive operations.

The next chapter deals with the US artillery and the tactics it has developed to deal with the Soviet artillery threat.

ENDNOTES

CHAPTER III

¹Sidorenko, Offensive, 25-26. In another battle, at Tel'tov Canal, the 3d Guards Tank Army concentrated 375 guns per kilometer of front to force the breakthrough, 22.

²Ibid., 26, as quoted from Archives of the Ministry of Defense, Fund 233, Inventory 2456999, File 1, Sheet 48.

³Ibid. 25-26.

⁴For purposes of this discussion, and for later analysis, an explanation of the Soviet artillery structure is required. Included in their artillery command structure is all indirect fire weapons, including anti-tank units and close support air defense weapons. This thesis will include only artillery weapons and heavy mortars in the equation.

⁵Collins, Military Trends, 186-187.

⁶Liddell Hart, Red Army, 347.

⁷The Soviets had some self-propelled howitzers during WW II which were simply howitzers placed on the Stalin tank chassis. See Batchelor and Hogg, Artillery, 121-122.

⁸Collins, Military Trends, 167, footnoted on 203.

⁹Max range for the 152-mm is 18.5 KM while for the 155-mm, 18 KM, but only with an oversized propellant charge. Maximum rate of fire for the 152-mm is 6 rounds per minute; for the 155-mm, 1 round per minute sustained, and 4 rounds per minute for short periods.

¹⁰Information for Table 7 is taken from Collins, Military Trends 193; CACDA, Handbook 550-2, 4-2, and 5-3 to 5-10; and Weiner and Lewis, Warsaw Pact, throughout.

¹¹Brown, Military Posture for FY 79, 72.

¹²Data for Table 8 is taken from USAITAC/BDM, Soviet Army Operations, 2-22, 2-23, and 5-4.

¹³Ibid., 5-4.

¹⁴Ibid. Each army may have more than one separate artillery regiment assigned.

- ¹⁵CACDA, Handbook 550-2, 3-2.
- ¹⁶Ibid., 1-4 and 3-2.
- ¹⁷Ibid.
- ¹⁸Sidorenko, The Offensive, 29.
- ¹⁹USAITAC/BDM, Soviet Army Operations, 1-6.
- ²⁰Sidorenko, The Offensive, 29.
- ²¹Ibid., 22.
- ²²Ibid., 144-145.
- ²³USAITAC/BDM, Soviet Army Operations, 5-3.
- ²⁴Ibid.
- ²⁵Ibid., 5-5.
- ²⁶Ibid., 5-4.
- ²⁷Ibid., 5-5.
- ²⁸Ibid., 5-2.
- ²⁹Ibid., 5-12.
- ³⁰Ibid., 5-14.
- ³¹Sidorenko, The Offensive, 146-147.
- ³²USAITAC/BDM, Soviet Army Operations, 5-14.
- ³³Liddell Hart, Red Army, 354-355.
- ³⁴CPT Darrell W. Daugherty, "Soviet Artillery Massing Capability", Field Artillery Journal, (Nov-Dec 77), 32.

"Some believe the artillery's mission is to move, shoot and communicate. THEY ARE WRONG! Our mission is to provide close, continuous and timely fire support to the maneuver elements..."

BG Vernon B. Lewis, 1975

CHAPTER IV

US ARTILLERY

1. Introduction

US Army artillery doctrine developed in World War II remained viable during involvement in both Korea and South Vietnam. The reason for this was simply that in none of those wars was the US Army heavily outgunned and outnumbered, as it is almost certain to be in any future European conflict. Recognition of this new experience of being outnumbered has prompted the US Army field artillery community to struggle with the problem of defeating Soviet artillery. However, as the above quote indicates, primary concentration is still focused on the defeat of enemy infantry and armor.¹ Quest for the ability to mass fires on a single target, to increase the responsiveness of field artillery to the maneuver commander, and to improve the lethality of munitions against infantry and armor targets has marked American artillery evolution throughout the period since World War II.²

While the artillery community is emphasizing the role of the artillery as a combat multiplier and member of the combined arms team, the tank is being touted as the focal point of battle in US Army doctrinal publications. FM 100-5, the capstone tactical manual of

the US Army, states: "All great armies of the world rest their land combat power upon the tank,"³ and "the tank... is likely to remain the single most important weapon for fighting the land battle."⁴ If World War II or the Middle East Wars hold any lesson for the US Army it should be that there is no single most important weapon on the battlefield. The key to success in the next war, as in all past wars, will be the ability to concentrate the available fire power from many sources. The German Army, tank heavy and artillery light, was unable to match the firepower of either the American or Soviet Armies because of its deficiency in artillery.⁵

The conclusion that the role of artillery is secondary to that of the tank raises the question of how artillery is intended to be used tactically to support the land battle. In essence, based on doctrine revised since the end of the Vietnam War, US Army artillery is to be used in the defense to suppress enemy direct fire weapons, to suppress enemy air defense weapons, to break up enemy attacks, and to provide counterfire against enemy artillery weapons.⁶ All these are to be accomplished by concentrating overwhelming firepower in the area of the main attack.⁷ Because of the complexity and continuous nature of these tasks numerical superiority, or at least equality, is required, which may not always be the case.

This chapter examines the means the US artillery possesses to accomplish these defensive tasks. These means will be examined under three categorical headings. The first includes the numbers and characteristics of American artillery weapons. This will be followed by a discussion of controlling organizations. Finally,

coverage will extend to a brief discussion of artillery tactics in the defense with particular attention to task organizing for combat and fire planning. This explanation is not intended to imply that US Army artillery is only a defensive weapon. Quite the contrary is true with regard to offensive capabilities of that arm. This thesis, however, focuses on the most likely situation to be faced in Europe, which would find the United States forces, at least initially, on the defense.

2. Weapons Systems

The United States Army has a total of about 4500 artillery pieces and 1700 heavy mortars⁸ in its inventory. This number is significantly smaller than that of the total inventory of the Soviet Army, however, a decided advantage of American artillery is that almost all weapons are fully-tracked, self-propelled, and in some cases, partially armored for crew protection.⁹ As was pointed out in the preceeding chapter, this advantage is rapidly being overcome by the Soviets.

The US Army relies principally on the 105-mm, 155-mm, 175-mm, and 8-inch artillery pieces, and the 107-mm (4.2-inch) mortar for close fire support. Also available is the Lance Missile. Table 9 lists selected characteristics of American weapons currently in the inventory. (Refer to Table 7 in Chapter III for a comparison with Soviet weapons).¹⁰

TABLE 9
US ARTILLERY WEAPONS

<u>Weapon</u>	<u>Ammunition</u>	<u>Range(KM)</u>	<u>Max/Sustained¹ Rate of Fire</u>	<u>Projectile Weight (lbs)</u>
107-mm Mortar Ground or Track- mounted	HE, SMOKE ILLUM, WP CS	5.65	6/2 Rds per minute	35
105-mm, How, Towed, M101A1	HE, ICM, HEP, WP, smoke	11	10/3 rounds per minute	33
105-mm How, Towed, M102	(Same as 105- mm above)	11.5	10/3 rounds per minute	33
155-mm How, Towed M114A2	HE, ICM, Smoke WP, ILLUM, NUC	14.6	4/1 rounds per minute	95
155-mm How, Towed, M198	(Same as 155- mm above)	18.1 (Chg 8) 14.8 (Chg 7)	4/1 rounds ² per minute	95
155-mm How SP, M109A1	(Same as 155- mm above)	18.1 (Chg 8) 14.8 (Chg 7)	4/1 rounds ² per minute	95
8-in. How, SP, M110	HE, ICM, NUC	16.8	1/0.5 rounds per minute	200
8-in. How SP, M110A1	HE, ICM, NUC	20.6	1/0.5 rounds per minute	200
175-mm Gun, SP, M107	HE	32.7	1/0.5 rounds per minute	147
Lance Mis- sile, Towed and SP	ICM, NUC	110 (NUC) 65 (NONNUC)	Reload of Launch De- pendent	2,900 (NUC) 3,400 (NONNUC)

¹Rate of fire for all US weapons is categorized as maximum rate for first 3 minutes and a sustained rate of fire expressed in rounds per minute.

²With Charge 8 the sustained rate of fire is further reduced after 60 minutes of firing to 1 round every 3 minutes.

Two of these characteristics depicted are worthy of special mention. They are the relatively limited range and low rate of fire as compared to the weapons of other armies (recall the example used in Chapter III). Tube artillery development since the end of World War II has failed significantly to increase either of these characteristics. Major tube weapons systems brought into the inventory during this period,

and still in use, include the M109A1 self-propelled 155-mm howitzer, the M198 towed 155-mm howitzer, the M107 self-propelled 175-mm gun, the M110A1 self-propelled 8-inch howitzer, and the M102 towed 105-mm howitzer. The M109A1 and M198 have added about 3,500 meters in range over the older M114 towed 155-mm, while the M102 added only 500 meters over the older towed 105-mm howitzer. The M107, with its tremendous range capability of over 32 kilometers, is hampered by its slow rate of fire of one round every two minutes. The M110A1, an improvement over the older 8-inch howitzer, has added 3,800 meters to its system. Of all the new systems introduced, none have increased the rate of fire over the older weapons systems.

Unlike the Soviets, when new systems are introduced in the US Army, the older systems are phased out, so that the net effect is a generally stable number of total artillery pieces of newer design or improved quality.¹¹ This offers an advantage in controlling the proliferation of weapons types, which the Soviets do not always follow. The lack of significant improvements in range and rate of fire characteristics, however, makes it questionable whether US Army artillery weapons systems have kept pace with those of the Soviet Union. These two shortcomings in range and rate of fire could be very significant factors in coping with Soviet artillery.

The next section discusses the artillery organizations which control these weapons systems.

3. Organizations¹²

In the US Army, artillery organizations fall into two categories. These categories are corps artillery and artillery with the

corps. An artillery unit assigned to the corps and not attached to a subordinate maneuver unit is part of corps artillery.¹³ These same units, along with all other organic, assigned or attached artillery units are designated artillery with the corps.¹⁴ This latter designation includes the organic artillery of divisions, armored cavalry regiments and separate maneuver brigades.¹⁵ These artillery organizations, along with the maneuver units they normally support, are depicted in Table 10 (See Table 8 in Chapter III for a comparison with Soviet organizations).¹⁶

Maneuver Element	Artillery Headquarters	Subordinate Artillery Battalions	Weapons Per Battalion
Corps	Field Artillery Section; FA Brigade (s)	Variable number of battalions and mixture of caliber and mobility based on mission and unit supported.	18 105-mm 18 155-mm 12 8-inch 12 175-mm 6 LANCE
Mech. Inf/ Armored Division	Division Artillery	3 155-mm (SP) 1 8-in. (SP)	18 12
Infantry Division	Division Artillery	3 105-mm (T) 1 155-mm/8" Composite BN	18 18/4
Airborne Division	Division Artillery	3 105-mm (T)	18
Airmobile Division	Division Artillery	3 105-mm (T) 1 155-mm (T)	18 18
Sep. Brigade Inf/Abn Mech/Armd	Battalion Battalion	105-mm (T) 155-mm (SP)	18 18
-Armd Cav Regiment	1 Battery Per Squadron	155-mm (SP)	6 Gun Battery

NOTE: The US Army plans to increase the number of tubes per battery from 6 to 8 in the direct support battalions (155-mm) in the near future.

A clear understanding of these organizations is a necessary prelude to any discussion of artillery tactics. At the corps level, the

artillery control headquarters is the field artillery section. The corps fire support coordinator, a general officer, acts in the dual capacity as commander of corps artillery and advisor to the corps commander on fire support matters. Directly subordinate to the corps artillery commander are field artillery brigades, command and control headquarters to which a variable number of battalions may be assigned depending upon the unit mission. The field artillery brigade may be assigned up to six artillery battalions and given any of the standard field artillery missions of direct support, general support, general support reinforcing, or reinforcing (discussed in tactics section). The brigade may be attached to one of the maneuver divisions for a particular operation or phase of operation. Attachment gives the division commander total control of the units of the brigade. The field artillery brigade will normally consist of any mixture of 155-mm, 175-mm, and or 8-inch battalions. Lance missile battalions will normally be retained under direct control of the corps artillery commander.¹⁷

Each maneuver division has its own organic artillery. Control of this organic artillery is exercised by the division artillery commander, who also serves as the division fire support coordinator. In this capacity he assigns tactical missions to each of the organic artillery battalions and plans and coordinates (through his staff) the fires of the artillery to support the maneuver plan. Mechanized infantry and armored division artillery consists of three self-propelled 155-mm battalions and one self-propelled 8-inch battalion.¹⁸ Infantry division artillery consists of three towed 105-mm battalions

and a composite battalion of three towed 155-mm batteries and one self-propelled 8-inch battery.¹⁹ The airborne division artillery consists of three towed 105-mm battalions.²⁰ Airmobile division artillery possesses three towed 105-mm battalions and one towed 155-mm battalion.²¹

Each separate brigade has an organic field artillery battalion. In the infantry and airborne brigade the organic unit is a towed 105-mm battalion; in the mechanized infantry and armored separate brigade, the organic unit is a self-propelled 155-mm battalion.²² Each regimental armored cavalry squadron is supported by an organic self-propelled 155-mm howitzer battery.²³

American artillery battalions consist of three firing batteries (except the composite battalion with four batteries). 105-mm and 155-mm battalions have six guns per battery, and the 175-mm and 8-inch battalions, four guns per battery. A decision has been made to increase the 155-mm batteries to eight guns, however this action has not been completed as of this writing. The Lance missile battalion consists of three batteries of two launchers per battery. Target acquisition capabilities are present at division artillery level, and support elements are organic to all artillery organizations at battalion level and above.

These artillery unit organizations afford flexibility to the maneuver commander in executing his defensive plan. Headquarters elements are plentiful, from corps down to battalion level, and their main function is to coordinate fire support for the maneuver force. The next section will examine how these units are task organized and

then utilized in the conduct of the defensive battle.

4. Tactics in the Defense

The maneuver unit commander's objectives in the defense are to cause the enemy's attack to fail, retain tactical, strategic, or political objectives, control essential terrain, cause the enemy to mass so that he is more vulnerable to concentrated fire power and gain time as a prelude to offensive operations.²⁴ US doctrine centers around the active defense, wherein forces and fire power are concentrated on the most likely enemy avenues of approach to accomplish the above objectives.

The active defense is based upon positioning forces in depth within a covering force and a main battle area. The covering force is used both to provide early warning and intelligence information on the enemy's intentions and to deceive the attacker as to the defender's intentions and dispositions. Forces in the main battle area respond to the enemy's intentions by occupying positions along the main avenues of approach. The achievement of favorable ratios for the defender is realized by this placement, and by the prudent use of combat multipliers, such as combat engineer support, attack helicopters, and artillery. Ideally this form of defense is intended either to defeat the enemy well forward or to delay and disrupt his formations to the point where offensive action is no longer possible. The active defense accomplishes its mission by, again ideally, using all the combat multipliers, fighting as a combined arms team, and exploiting all the normal advantages of the defender.²⁵ Referring to the earlier discussion in Chapter II, maneuver is the key to a successful

active defense. The overriding consideration in the European arena, to defend well forward, may take away much of the maneuver required of the artillery as well, thereby reducing its effectiveness in the active defense.

Whatever the effectiveness of the active defense in Europe, the artillery retains a vital role in the defense. It has the ability to provide concentrated fires from widely separated locations, and is one of the principal means available to disrupt and disorganize attacking formations. Specifically, the artillery is assigned the following tasks in the active defense:²⁶

- 1) Disorganize, delay and weaken the enemy before he attacks.
- 2) Strike him as he attacks to strip away combat power and reduce the odds.
- 3) Mass fires to canalize, stall and destroy attacking elements in the main battle area.
- 4) Fire beyond the main battle area to isolate enemy units, and
- 5) Counterfire throughout to suppress, neutralize, or destroy his indirect fire support.

It is intended that these tasks be accomplished by the organization of artillery units and through use of fairly sophisticated fire planning techniques. Generally, the organization of artillery for combat consists of assigning standard tactical missions to artillery battalions or brigades in support of the maneuver forces. These standard tactical missions are direct support, reinforcing, general support, and general support-reinforcing. Because of their importance in how US artillery provides support to the maneuver force, each of these standard missions will be briefly discussed.

A field artillery unit of any size (but usually a battalion) may be assigned a mission of direct support. This mission is the most responsive to the maneuver commander, as it devotes that artillery unit's fires almost exclusively to the maneuver unit.²⁷ In most cases, an artillery battalion is given the direct support mission to a maneuver brigade. A direct support artillery unit plans all the fires for the maneuver unit it is supporting.

A reinforcing mission is given to an artillery unit to augment the fires of another field artillery unit. Generally, this mission is assigned from artillery battalion to artillery battalion; however a field artillery brigade may be given this mission to augment the fires of a battalion, another field artillery brigade or a division artillery. A reinforcing artillery unit has its fires planned by the artillery unit it reinforces.

A general support mission is assigned to any size artillery unit when the force commander wants to retain control of that artillery unit. An artillery unit assigned the general support mission provides fires to any element of the force, with priority of fires to the artillery headquarters of the force. The force artillery headquarters plans the fires of the general support unit.²⁸

A general support-reinforcing mission is a compromise between the previous two tactical missions. The artillery unit assigned a general support-reinforcing mission provides fires to the entire maneuver force (where possible), but augments the fires of the artillery unit it is reinforcing, and will be positioned in the zone of action of the reinforced artillery unit. The force artillery headquarters

plans the fires of the GSR unit with priority of fires to the reinforced unit.²⁹

Five fundamentals govern the allocation of artillery assets and the assignment of tactical missions in the defense. These fundamentals are:³⁰

1) Use a high degree of centralized control. This is achieved by assigning more general support and general support reinforcing missions, so that the force commander retains control of artillery units.

2) Provide adequate support to committed maneuver units. All committed maneuver units are provided an artillery unit in direct support.

3) Provide weight to the most vulnerable sector. This is accomplished by the use of reinforcing and general support missions to units, and by positioning these units so that their fires will cover the most vulnerable area. Allocation of additional ammunition to units in the most vulnerable area is another means of providing weight.

4) Provide immediately available support to the force commander so that he can influence the action. This is accomplished by assigning general support and general support-reinforcing missions to units as they are directly responsive to the force artillery headquarters.

5) Facilitate future operations. This fundamental directly ties in with the movement of maneuver forces within the main battle area and with the transition to offensive operations in the active defense. This is accomplished by positioning of artillery units, restricting ammunition allocations, and the assigning of on-order missions to field artillery units.

The application of these fundamentals is dependent upon how the maneuver force commander plans to accomplish his mission in the defense. Artillery units will be allocated to the covering force area maneuver units and to the main battle area maneuver units. Initially, the covering force area will be heavily weighted with artillery, and as the scene of battle shifts to the main battle area,

covering force artillery units will revert to support the main battle area force. A typical example of this would be a field artillery brigade assigned the mission of direct support to the covering force; an armored cavalry regiment. Upon movement into the main battle area the field artillery brigade could then be assigned the mission of reinforcing the fires of the division artillery. As a rule artillery units are not held in reserve.

Fire plans to support both the covering force area and the main battle area are dependent on the maneuver commander's scheme of defense. Because of the wide areas to be defended, the range limitations of the artillery, and the requirement to plan for all possible initiatives of the attacker, it is not possible to prepare and execute a fully coordinated force fire plan in the defense. Generally, there will be a series of brigade level fire plans (prepared by the direct support artillery battalions) rather than a coordinated overall force fire plan. There are, however, four common considerations all fire support coordinators will use in fire planning for the defense. These considerations are:³¹

- 1) Centralize control of fire support,
- 2) Use mobility to concentrate fire support assets as necessary,
- 3) Engage targets on the basis of the force commander's priorities, and
- 4) Engage the enemy as far forward as possible.

These four considerations provide a coordinated effort for the maneuver commander from his fire support assets, if not a coordinated fire plan for the defense.

What has been presented in this section on tactics is the accepted doctrine for use of field artillery in the active defense. While field artillery tactical doctrine does and should orient on support of the maneuver force, some attention must be paid to defeat of enemy artillery. The division artillery has recently been given the mission of counterfire, and has received a target acquisition battery for locating enemy artillery. The real need of the division artillery commander, more guns, have not been forthcoming in significant numbers as yet.³² The difficulty comes in attempting to meet all the requirements imposed upon the artillery (suppression fires, targets of opportunity, attacking troops, and so on) with current limited assets. It may prove to be an insurmountable difficulty.

5. Summary

This discussion of US Army artillery weapons, organizations, and tactics should establish that resources are severely limited. Yet the role of artillery in the defense may be critical to the outcome of the battle. The central issue that this raises is whether American artillery, as significantly outnumbered as it apparently will be in facing a Soviet force, can meet all its requirements in the defense. MG John A. Crane, an artillery officer in World War II wrote:

With the campaigns in Poland and France in 1939 and 1940 came a huge expansion of our armored force. Blitzkrieg was the password, and prosaic, conventional artillery was 'streamlined' down and cut to the bone. We learned the hard way. We learned that it took artillery and still more artillery to counter tanks and enemy artillery.³³

We might be wise to heed his words today.

ENDNOTES

CHAPTER IV

¹The article from which the quote is taken is BG Vernon B. Lewis, "Evolving Field Artillery Tactics and Techniques," Field Artillery Journal (Jan-Feb 75), 44-48. This article initiated a number of changes in the field artillery community but pays limited attention to the defeat of Soviet artillery, as is the case in most artillery doctrinal publications I reviewed.

²FM 100-5, Operations, 2-13.

³Ibid., 2-2.

⁴Ibid., 2-6.

⁵Fred K. Vignan, "The Theoretical Evaluation of Artillery After World War I", Field Artillery Journal, (Jan-Feb 76), 21-23, 38.

⁶FM 6-20, Fire Support, 5-7.

⁷Ibid., 5-6 to 5-7.

⁸Collins, Military Trends, 186-187. Actual numbers cited in the reference are artillery - 4,440; heavy mortars - 1,685. Heavy mortars are the 107-mm (4.2 inch), found in the tank and mechanized infantry battalions.

⁹Self-propelled weapons are used exclusively in the heavy US division. The M109 provides some crew protection.

¹⁰Information in Table 9 is from FM 6-20, Fire Support, B-A-2 to B-A-3.

¹¹Collins, Military Trends, 186-187. Reviewing Collins' table will show that over the past 8 years the number of US artillery weapons has actually decreased from 6,885 to 4,440. Much of this decrease can be attributed to the phase-down at the end of the Vietnam War.

¹²All information regarding US artillery organizations is taken from FM 6-20, Fire Support, Appendix B, B-16 to B-22 unless otherwise noted.

¹³FM 6-20, Fire Support, B-17.

¹⁴Ibid.

¹⁵Ibid.

¹⁶Ibid., B-B-1. All data for Table 10 is from this reference.

¹⁷Ibid., B-17.

¹⁸Ibid., B-21.

¹⁹Ibid., B-20.

²⁰Ibid., B-21.

²¹Ibid., B-22.

²²Ibid., B-B-1.

²³Ibid.

²⁴FM 100-5, Operations, 5-1.

²⁵Ibid., 5-4 to 5-7.

²⁶FM 6-20, Fire Support, 5-7.

²⁷Ibid., 3-27.

²⁸Ibid., 3-28.

²⁹Ibid., 3-27.

³⁰Ibid., 3-29 to 3-30.

³¹Ibid., 5-5 to 5-6.

³²There has not been an increase in the number of artillery battalions in the division. The FA brigade, which is a relatively new concept, is the only source for additional artillery, and these brigades are not controlled by the division commander.

³³Vignan, "Theoretical Evaluation of Artillery", FA Journal, (Jan-Feb 76), 38, as quoted.

"It is with artillery that war is made."

Napoleon

CHAPTER V

ANALYSIS OF THE OPPOSING FORCES' ARTILLERY

1. Introduction

Thus far the armies and the artillery forces of the Soviet Union and the United States have been discussed in relative isolation from one another. The purpose of this chapter is to juxtapose the information that has been presented to permit a comparative analysis of the capabilities and limitations of the two armies' artillery.

Four factors enter into any determination of likely force matchups. These factors include the total conventional land forces available to each side, the presence of NATO and Warsaw Pact forces, other global commitments of both countries, and how the attacker plans to fight the battle.¹ The last factor is especially pertinent to this study, and conventional wisdom as reflected in FM 100-5 suggests the Soviet Army will attempt to gain a favorable ratio greater than 4:1 in the area where it intends to make the main effort.² Provided the Soviets are not at war elsewhere, the other three factors positively support their ability to acquire the requisite ratio.

Under ordinary circumstances, the forces in contention would be an American division opposing a Soviet army. For that reason, this analysis will be directed toward the artillery available to those two forces. This analysis will include artillery weapons ratios

(numbers) and volume of artillery firepower available to each force (comparative weapons characteristics). A discussion of the advantages of the attacker and the defender from an artillery vantage point will follow.

2. Division and Combined Arms Army: An Artillery Analysis.

An analysis of opposing forces' artillery rests on the establishment of a credible scenario. The setting is central Europe at the international boundary between West and East Germany. North Atlantic Treaty Organization and Warsaw Pact forces are deployed along the boundary, and hostilities have commenced. The focal point of this analysis is one 40-kilometer segment of the sector.

An American armored division is deployed in positions west of the international boundary defending the entire 40-kilometer sector. This division is at full strength. In addition to the division's organic artillery units, which consists of three 155-mm battalions and one 8-inch battalion, the corps commander has attached a field artillery brigade to the division. This field artillery brigade consists of one 155-mm battalion, two 8-inch battalions, and one 175-mm battalion. This gives the division commander a total of seventy-two 155-mm howitzers, thirty-six 8-inch howitzers, and twelve 175-mm guns. These artillery weapons, as well as the fifty-three 107-mm mortars organic to the various maneuver battalions, are the artillery fire support directly responsive to the maneuver units defending the 40-kilometer sector. Because of the likelihood that close air support resources available to this force is countered in kind by the opposing Soviet force, it will not be considered.

Opposing the American armored division is a Soviet combined arms army composed of three motorized rifle divisions and one tank division, all at full strength. The army's artillery regiment consists of two 152-mm battalions and one 130-mm battalion. Artillery organic to the divisions of the army consists of nineteen 122-mm battalions, three 152-mm battalions, four BM-21 multiple rocket launcher battalions, and four FROG-7 battalions. Additionally, each motorized rifle regiment has one battalion of 120-mm mortars for a total of ten. The front commander has allocated army two 130-mm battalions and one 152-mm battalion from front artillery assets. Of the total 122-mm and 152-mm battalions, half are self-propelled weapons, the remainder are towed.

The number of artillery weapons directly responsive to each force commander is shown in Table 11.*

TABLE 11	
<u>WEAPONS AVAILABLE TO THE OPPOSING FORCES</u>	
<u>US Division</u>	<u>Soviet Combined Arms Army</u>
107-mm Mortar - 53	120-mm Mortar - 180
155-mm Howitzer - 72	122-mm Howitzer - 342
8-inch Howitzer - 36	130-mm Gun-How - 36
175-mm Gun - 12	152-mm Gun-How - 72
Total - 173	Total Tubes - 630
	122-mm MRL - 72
	FROG - 7 - 16
	Total - 718

The raw ratio of Soviet to US artillery weapons in this array is about 4.2:1. However, as this force is analyzed based on weapons

*Since completion of this thesis the 155-mm battalions in Europe have converted to eight-gun batteries, which would alter these numbers slightly.

capabilities the situation worsens for the US artillery force. Table 12 examines the total volume and mass of fire the American artillery force would be able to deliver in a ten minute period.

TABLE 12			
VOLUME AND MASS OF FIRE			
US DELIVERY CAPABILITY (10 MINUTES)			
Type Weapon	Total Number	Volume* (Total Rounds)	Mass (Weight in Lbs.)
107-mm Mortar	53	1696	59,360
155-mm Howitzer	72	1368	129,960
8-inch Howitzer	36	234	46,800
175-mm Gun	12	78	11,466
	TOTAL	3376	247,586

*Based on maximum and sustained rates of fire as stated in Table 9.

Note that this force can fire a total of 3376 high explosive rounds, with a total throw weight of 247,586 pounds, in a ten-minute period.

Table 13 depicts similar data for the Soviet artillery force.

TABLE 13
VOLUME AND MASS OF FIRE
SOVIET DELIVERY CAPABILITY (10 MINUTES)

Type Weapon	Total Number	Volume* (Total Rounds)	Mass (Weight in Lbs.)
120-mm Mortar	180	10,800	378,000
122-mm Howitzer	342	20,520	984,960
130-mm Gun-How	36	2,160	159,840
152-mm Gun-How	72	3,600	345,600
MRL **	72	2,880	290,880
FROG-7 **	16	16	15,840
	TOTAL	39,976	2,175,120

*Based on rates of fire as stated in Table 7.

**Data shows one volley in ten minutes for MRL and FROG-7.

Data in these two tables reveal a serious deficiency on the part of the American division artillery force. Reflected is the cumulative effect of deficiencies in total numbers of weapons and individual weapon rates of fire. The US division artillery force is outnumbered in total weapons by more than 4:1, by volume of fire of almost 12:1, and by mass of fire of almost 9:1. Not shown are some corps artillery units, such as the Lance. The intention here is to concentrate on artillery that is directly responsive to the force commander.

Range capability of the Soviet artillery force is slightly superior to that of the American force. The average range attainable by the Soviet artillery is about 15.4 kilometers; that of the US artillery about 14.9 kilometers, a difference of 500 meters.³ However, as far as range capability is concerned, the real advantage exists at

ranges in excess of 20 kilometers. At these ranges the Soviet force has one hundred and twenty-four weapons (130-mm, multiple rocket launcher, and FROG-7), while the US force has only twelve (175-mm), a ratio in excess of 10:1. If we consider the rate of fire capability at this range for a ten minute exchange then it is a staggering 65:1 ratio in favor of the Soviet force.⁴

Thus far the superiority of the Soviet artillery force is obvious. However, factors other than total numbers and weapons characteristics must also be considered to complete this analysis. These factors will be examined under the headings of advantages held by the attacker (Soviet) and the defender (US). A brief discussion of those factors considered relatively equal will then follow.

The attacking force artillery possesses a number of tactical advantages, which work to the detriment of the defending artillery force. First among the attacker's advantages is that he has the initiative. He chooses when and where to mass his artillery, allowing him the opportunity either to probe for or create weak spots in the defensive positions. The defender must be strong everywhere along the line to overcome this advantage. For example, if the attacker decides to concentrate his forces and fire power opposite a six to seven kilometer breakthrough point along the 40-kilometer front, it is likely that he would be able to achieve a favorable ratio of more than 10:1 in artillery. The defender would be unable to respond to this challenge with anything resembling an effective counterfire program. The attacker also has the advantage of selecting targets he wants to engage, thus imposing the necessity on the defender to be in the right place to res-

pond and making the defender responsible not only for counterfire, but also for suppression fires, execution of preplanned fires, and all the other requirements assigned to US forces artillery in the defense.⁵ Another advantage of the attacker in this scenario is the ability to execute counterfire against the defending artillery forces. The greater number of weapons, coupled with superior range and rate of fire capabilities makes this so. These same two factors (superior numbers and capabilities) also convey to the attacker the advantage of being able to meet all requirements assigned to the artillery in Soviet offensive doctrine.

The defending artillery force also possesses some advantages. It will be firing initially from prepared positions, thus making it more difficult to locate and destroy. The defender has a preponderance of self-propelled weapons offering some crew protection and increased mobility. The defender's counterfire program would probably be fired against a large number of towed artillery weapons which afford little crew protection, especially when the attacker is firing. The defender, if he has been properly deployed initially, will be required to move less frequently than the attacker, thus prolonging his effective firing time. The defender also knows the terrain, giving him greater potential for first round hits and an enhanced ability to mass fires along the main avenues of approach. The defender inherits one advantage because of the slow rate of fire of his weapons. The advantage of ammunition availability is conveyed because, as indicated in Table 13, the American force would consume about one-twelfth of the ammunition that the Soviet force would consume. Re-

supply of such massive amounts of ammunition would be no small task for an attacking force. This could, however, prove to be a very dubious advantage.

One final point on advantages must be made regarding the active defense. This particular point concerns the ideal execution of the active defense with respect to the requirement for freedom of maneuver by the defender, both laterally and in depth. This maneuver allows the defender to avoid a situation similar to the static defense of World War I. While strategic and political considerations in the European arena, as depicted here, do not entirely remove this maneuver option, the imposed requirement to defend well forward severely limits the defender. This could prove to be a distinct advantage to an attacker with overwhelming numbers of tanks and artillery pieces.

A number of tactical factors must be rated relatively equal for these two artillery forces. The first of these would be the ability to mass fires. This particular attacking force has the ability to mass fires either by physical placement of guns on the ground (the "hub-to-hub" concept) or by technical fire direction means, very similar to the force it is attacking. Command and control assets, survey assets, and fire direction assets of each of the forces are relatively equal in this respect.⁶ The second tactical factor seen as relatively equal is target locating capabilities. The defender would, under most circumstances, have the advantage in this area because of his less exposed status. However, much of this advantage of the defender would be offset because of the greater number of assets available within the Soviet combined arms army. Also to be considered is the fact that

the defender must expose himself to some degree in order to defend. The third tactical factor that is viewed as relatively even is the survivability of the artillery force. A number of points have been made concerning the defender's advantages in this respect. These points must be tempered with the realization that the attacker has a much greater number of weapons to lose than the defender, thus somewhat balancing this factor.

3. Summary

The relative advantages of the attacker and the defender enumerated in the scenario are summed up in Table 14.

TABLE 14
COMPARISON OF FORCES ARTILLERY

	<u>US Force</u>	<u>Favors</u>	<u>Soviet Force</u>
Number of Weapons			x
Weapons Capabilities			x
Volume of Fire Possible			x
Mass of Fire Possible			x
Ability to Mass Fires	Probably about even		
Target Locating Assets	Probably about even		
Mobility of Artillery	Slightly		
Survivability of Artillery	Probably about even*		
Logistical Factors (ammunition availability)	x**		
Ability to execute counterfire			x
Ability to fulfill role as required by doctrine			x

*This could be given to the US force on an individual battalion basis, however it would balance out because of the greater numbers of the Soviet force.

**This is not reflective of either's ability to supply, but is based on the fact that the force which can fire the greater number of rounds is going to have the greater resupply problem.

All that has been discussed must lead to the conclusion that the heavily outnumbered American division artillery force suffers more disadvantages than its' opponent. Those advantages the American force possesses cannot compensate for the disadvantages in numbers and weapons characteristics and tactical considerations. The American division artillery force, outnumbered by superior weapons and put on the defensive, has more firing responsibilities and fewer assets than the Soviet combined arms army artillery force. It must be concluded that the American division artillery force in this scenario is not able to perform adequately all the tasks it would be called upon to assume because of these shortcomings.

I do not want to paint a picture wherein a U S Army division is set up to be clobbered by the massed artillery of a Soviet combined arms army. It is suggested by the discussion in this chapter that the factors of numbers and characteristics of weapons and tactical advantages favor the Soviet force. Couple this with the lack of freedom of maneuver so essential to the active defense and there would appear to be serious flaws in our tactical doctrine which might allow such a scene to unfold.

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CHAPTER V

¹Soviet doctrine for the offense is centered around the breakthrough, wherein he is able to mass 4 to 6 divisions on a very narrow front. See Chapter II for details.

²FM 100-5, Operations, 5-2.

³This was computed by multiplying number of weapons by their range, adding the sums and dividing by the total number of weapons.

⁴175-mm can fire 78 rounds in a ten minute period; the 103-mm - 2,160; the MRL - 2880 and the FROG-7 - 16.

⁵See Chapter IV for these requirements.

⁶Daugherty, "Soviet Artillery Massing Capability", Field Artillery Journal (Nov-Dec 77), 31-33. This article contains an excellent analysis of current intelligence information regarding the Soviet ability to mass fires at the fire direction center.

"God fights on the side of the best artillery."

Napoleon

CHAPTER VI

CONCLUSIONS/RECOMMENDATIONS

1. Introduction

It is obvious from the information presented in the previous chapters of this thesis that the Soviet Army possesses field artillery superior in quantity and, in many cases, quality, to that of the United States Army. It is equally obvious that the United States Army field artillery community has not adequately addressed this Soviet artillery threat either by weapon systems development or by tactical doctrine. There are three reasons why the problem of defeating Soviet artillery has not been solved.

First, emphasis has fallen on the defeat of Soviet tanks and suppression of enemy air defense weapons.¹ The chief reason for this is that military reports from the Middle East Wars have been concerned with tank and air battles. The defeat of enemy tanks and suppression of enemy air defense weapons are both essential tasks. However, the responsibility for defeating enemy artillery must also be accepted by field artillerymen as the planners and employers of all indirect fire means.²

The second reason behind the systems and doctrinal lag is an army wide tendency to rely on the superior technology of the United States to win out over the sheer numbers of the Soviet Union. I

question whether, in the first case, the United States still possesses that superiority, and in the second case, if it does, whether it will be sufficient against the Soviet artillery threat.³

The final reason for the lack of a solution is that the United States Army field artillery community may tend to rely excessively on the superiority of theater tactical nuclear weapons. The Soviet position is that use of any sort of nuclear weapons opens the door to strategic retaliation.⁴ For that reason superior tactical nuclear weapons may do less to act as a deterrent to the use of Soviet conventional forces than has been our experience in the past. First use of tactical nuclear weapons by the United States may pose the threat of a strategic nuclear exchange no one would be willing to risk. With the potential destructiveness of nuclear weapons the possibility of a "limited" nuclear war, without escalation to a strategic exchange is remote in any case. This is an assumption made throughout this thesis. It is not intended to downplay the importance of tactical nuclear weapons, but to emphasize the necessity for strong conventional forces.

These three considerations lead to several conclusions on the current state of contending conventional artillery forces.

2. Conclusions

Throughout this thesis a number of statements have been made to clarify points or establish a basis for further discussion. The purpose of this section is to summarize the conclusions I have drawn based on the material presented. All conclusions are based on the current weapons systems, tactics, and organizations of the two coun-

tries' conventional artillery forces.

The conclusions are:

- + The Soviets possess a greater number of conventional artillery weapons in their total force structure than does the United States. This numerical superiority would normally apply down to the lowest force level and is especially critical for the United States Army at the division level.
- + Soviet conventional artillery weapons are qualitatively superior to those of the United States in range and rate of fire characteristics. The slight edge the United States holds in self-propelled artillery pieces is being rapidly overcome by the Soviet Union.
- + United States Army artillery doctrinal literature does not adequately address ways to defeat a superior Soviet (or other) conventional artillery force. The primary reason for this appears to be that many of the tactics outlined assume US artillery quantitative and/or qualitative superiority.
- + United States Army artillery units are given too many tactical responsibilities to execute (suppression of direct fire weapons, suppression of enemy air defense weapons, firing at attacking enemy infantry, counterfire and so forth) with the limited resources available. This will almost guarantee that none will be executed properly.

3. Recommendations

The following general recommendations are possible solutions to the problems identified. These recommendations are not meant to be all inclusive. They are based on personal experience, historical examples, and projected or required needs in the realm of weapons

development. All require further study and research.

- + Increase the total number of artillery weapons available to the division commander so that the Soviet ratio does not exceed 3:1. This can be done in any number of ways, singly or in combination, including increasing the number of artillery battalions, batteries in the battalion, and/or guns in the battery.

- + Provide each mechanized infantry and tank battalion with a 105-mm howitzer battery as accompanying artillery, much as the Soviets use the organic artillery battalion in the motorized rifle regiment. An alternative to this is to organize the 107-mm mortars into a battery, adding additional mortars (a total of about twelve). Either of these formations, with appropriate support, could provide suppression fires and relieve other field artillery units of a great part of this requirement.

- + Establish a "counterfire command" (x number of battalions) within division artillery whose mission is to locate and fire at enemy artillery. Provide this command the assets to effectively execute this mission. The General Support Rocket System, when fielded, would be an excellent weapon for this role.

- + Review doctrinal literature on artillery tactics. Make it more practical and "how to", with emphasis on accomplishing the field artillery's principal task of defeating the opponent's artillery force.

- + Explore the possibility of forming "artillery killer teams," early in the battle, integrating attack helicopters, Air Force close air support, and artillery units to execute a meaningful counterfire program.

+ Charge the research and development community with developing a weapons system whose range and rate of fire characteristics match or exceed those of the Soviet Union. Obviously, we have the technology to do this. Potential exists in the German FH-70 155-mm cannon and/or the French F1 (GCT) 155-mm cannon (both of which have a rate of fire in excess of seven rounds per minute).⁵

4. Summary

The conclusions and recommendations outlined are not considered to be all-inclusive or necessarily the answer to all the problems at hand. In the end, fire support coordinators at all levels must be directly charged with and accept the responsibility for finding ways and means to defeat the massive Soviet artillery threat, using conventional artillery assets. We must not rely on tactical nuclear weapons to do this job because the possibility of their introduction may be remote. Likewise, we must not tie ourselves to the outdated notion that we are so far ahead of the Soviets in technology that they will never catch up. Instead we must devote additional attention and assets to the development of viable artillery tactics and doctrine and to the development of superior conventional artillery weapons systems to accomplish the task of defeating Soviet artillery.

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CHAPTER VI

¹Witness the development of the Cannon Launched Guided Projectile (CLGP), FA Scatterable Mines (FASCAM), etc,. These systems, while effective against tanks, beg the problem of defeating the Soviet artillery at long ranges.

²FM 6-20, Fire Support, II. The Fire Support Coordinator (FSCoord) at all levels is the artilleryman.

³Record, Sizing Up, 24; and Brown, Military Posture FY 79, 102, 104.

⁴Dietchman, Limited War, 46.

⁵Both of these cannons are under development, but are near fielding. The characteristics are:
F1 GCT (French) Range: 23.5 KM; Rate of Fire: 6 rounds in 45 seconds.
FH-70 (German) Range: 24 KM; Rate of Fire: 8 rounds per minute.

GLOSSARY OF TERMS

GLOSSARY OF TERMS

ACTIVE DEFENSE: The employment of weapons systems to deter, deflect, or otherwise defeat enemy forces, using maneuver and concentrations of defensive forces in selected areas on the battlefield. An in-depth disposition of forces is essential to a successful active defense.

ARTILLERY: In this study, all tube artillery weapons, mortars of 100-mm or greater, and tactical rocket systems with ranges less than 100 Kilometers.

CAPABILITY: The ability of a nation or coalition of nations to carry out specific national goals. Many variables impact on capabilities, including military force levels, time, terrain, weather, and national will.

CLOSE AIR SUPPORT: Air attacks against hostile forces which are in close proximity to friendly ground combat forces, and which require close coordination between the deliverer and the friendly ground unit.

COLD WAR: A state of international tension short of armed conflict, wherein other factors (political, economic, psychological, and so forth) are used to attain national goals.

COMBAT POWER (MILITARY BALANCE): Capabilities related to a specific military balance between nations or coalitions of nations. Ingredients would include numbers and types of forces, weapons and equipment capabilities, discipline, morale, training, command and control capabilities, staying power, and mobility (both tactical and strategic).

COMMAND AND CONTROL: The arrangement of facilities, equipment, personnel, and procedures in order to acquire, process, and disseminate data to decision makers to control combat operations.

CONTAINMENT: Measures to discourage or prevent the expansion of another nation's territorial holdings and/or influence. Specifically, an American policy directed against the Soviet Union.

CONVENTIONAL (FORCES, WAR, WEAPONS): Military organizations, hostilities, and hardware excluding nuclear, chemical and biological capabilities.

COUNTERFIRE: A U.S. Army artillery term, coined to denote the initiation or return of fire against enemy indirect fire means (usually mortars and artillery).

DEFENSE-IN-DEPTH: Defensive positions in succession along enemy axes of advance, as opposed to a single line of resistance (regardless of depth) as in the static defense.

DETERRENCE: Means which prevent opponents from initiating hostile actions and to inhibit escalation if combat occurs. Threat of use of force is the dominant means.

DIVISION EQUIVALENT: Separate brigades, regiments, or comparable military units whose aggregate capabilities are equivalent to a division, less logistics in some cases.

ESCALATION: An increase, deliberate or unpremeditated, in the intensity of armed conflict (usually used in connection with employment of nuclear weapons).

FIRST USE: Initial employment of specific military measures, usually in reference to nuclear weapons, during hostilities.

FLEXIBLE RESPONSE: A strategy of meeting aggression with the appropriate response to counter that aggression. A U.S. policy of the Kennedy Administration.

FORWARD DEFENSE: A strategic concept which calls for containing or defeating an enemy at or near the original line of contact in order to protect vital geographic areas.

FREE ROCKET: A rocket that is neither guided nor controlled in flight.

GROUND FORCES: Forces designed, equipped, and manned to conduct land warfare. Usually refers to a nation's army.

MANEUVER: The movement of forces upon the battlefield to accomplish a specific purpose or mission. Includes indirect fire means.

MANEUVER UNIT: Infantry, armor and armored cavalry units of any size.

MASSIVE RETALIATION: A strategic policy which calls for countering any type of aggression with highly destructive power. Usually a nuclear response to provocation considered serious enough to require military action.

MISSION: A function, task or objective assigned a military unit of any size.

NATIONAL WILL: The temper and morale of a nation's people as they influence national policy.

NUCLEAR (FORCES, WAR, WEAPONS): Military organizations, hostilities and hardware (any bomb, missile warhead, or other deliverable ordnance) that includes nuclear, chemical and biological operations or utilization of capabilities.

PARITY: Capabilities (nuclear and conventional) of near or equal effectiveness to enemy (or potential enemy) counterparts.

STATIC DEFENSE: Defensive positions in a single line, not dependent on depth, noted for the lack of maneuver on the part of the defensive force and limited or non-existent strategic reserves.

STRATEGIC NUCLEAR (FORCES, WEAPONS, OPERATIONS): Nuclear combat power designed for deterrent, offensive, and defensive purposes in defense of a nation's war-making potential and used within the overall strategy to accomplish national objectives.

SUPERIORITY: Capabilities (nuclear and conventional) clearly greater than those of the enemy (or potential enemy).

TACTICAL NUCLEAR (FORCES, WEAPONS, OPERATIONS): Nuclear combat power designed for deterrent, offensive and defensive purposes in a localized area.

THREAT: The capabilities, intentions and actions of actual or potential enemies to prevent successful fulfillment of national objectives.

TUBE ARTILLERY: Howitzers and guns, towed or self-propelled, as opposed to rockets and guided missiles.

WEAPON SYSTEM: A weapon and those support components required for operation.

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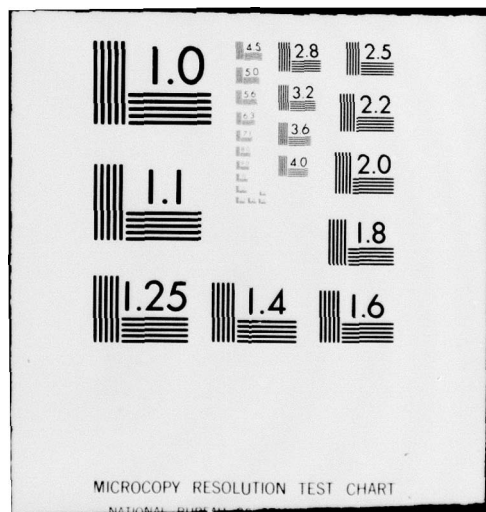
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